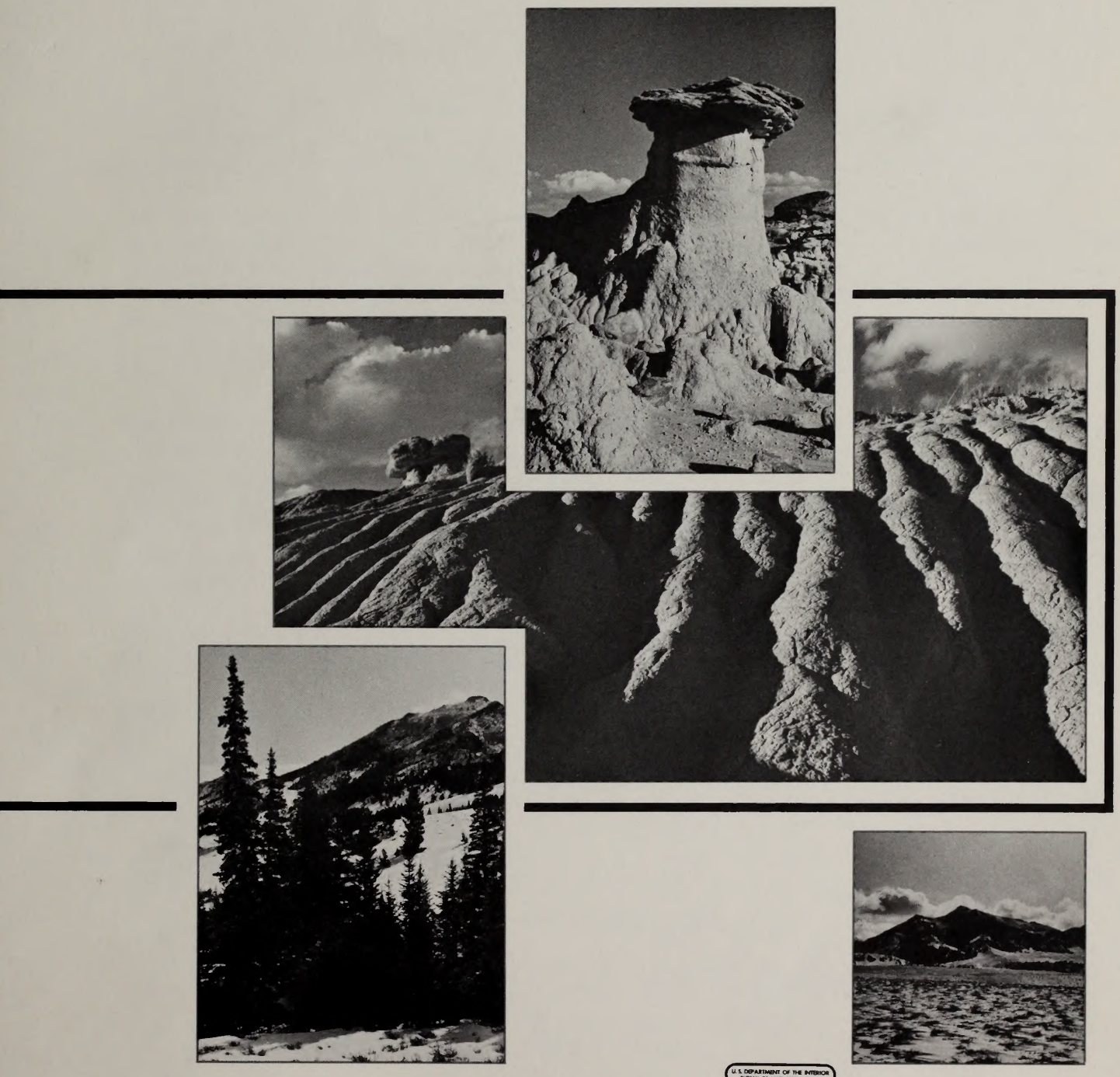
TES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT RAWLINS DISTRICT OFFICE

Adobe Town - Ferris Mountains

WILDERNESS ENVIRONMENTAL IMPACT STATEMENT draft



United States Department of the Interior

BUREAU OF LAND MANAGEMENT
District Office
P.O. Box 670
Rawlins, Wyoming 82301

IN REPLY
REFER TO:
4332-FA-EIS

NOTICE

Enclosed for your review and comment is the Draft Environmental Impact Statement (DEIS) for the Adobe Town and Ferris Mountains Wilderness Study areas (WSAs) in Carbon and Sweetwater counties, Wyoming.

The environmental impact statement is based on information from the Bureau of Land Management (BLM) and other sources, including information supplied by and in consultation with federal agencies, state agencies, local agencies, private organizations, and interested individuals. The purpose of the environmental impact statement is to give advance notice of the probable impacts of the Proposed Action and three alternatives on each of the WSAs, and to ensure that these impacts are considered in the decision making process.

The comment period for this DEIS will begin when the draft is filed with the Environmental Protection Agency and the Notice of Receipt is published in the Federal Register. The notice is anticipated in the first half of June 1983, and comments will be received for 60 days after filing and publication. Comments received after the review period will be considered in subsequent decisions, even though they may be too late for inclusion in the final environmental impact statement.

Please retain this draft. If extensive changes are not necessary in the final EIS, an abbreviated copy of the final document will be printed.

Comments should be sent to:

District Manager
Rawlins District
Bureau of Land Management
Box 670
Rawlins, Wyoming 82301

Sincerely yours,

Maxwell T. Lieurance

Maxwell T. Lieurance
State Director

Enclosure

DRAFT

ENVIRONMENTAL IMPACT STATEMENT

ADOBE TOWN - FERRIS MOUNTAINS WILDERNESS ENVIRONMENTAL IMPACT STATEMENT

CARBON AND SWEETWATER COUNTIES, WYOMING

Prepared By:

DEPARTMENT OF THE INTERIOR

BUREAU OF LAND MANAGEMENT

RAWLINS DISTRICT 1983

Raymond T. Fiemaure

STATE DIRECTOR

WYOMING STATE OFFICE

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SUMMARY

This EIS is an analysis of the effects of designation or nondesignation as wilderness of 102,366 acres of public land in two wilderness study areas (WSAs). Those areas, the Adobe Town and Ferris Mountains, are located in southwest and south-central Wyoming. This environmental impact statement (EIS) is in response to Section 603 of the Federal Land Policy and Management Act (FLPMA), which directs the Bureau of Land Management to inventory, study, and report to Congress, through the Secretary of Interior and President, those public lands suitable for preservation as wilderness.

AREAS OF CONCERN AND CONTROVERSY

Before preparation of this EIS, a scoping process was conducted to identify significant issues. Based on contacts with organizations, individuals, and federal, state, and local agencies, areas of concern and controversy were identified.

Of considerable concern was the possible impact wilderness designation could have on mineral exploration and production in the two areas. The Adobe Town area has known reserves of natural gas, and some interest has been expressed in oil and gas exploration in the Ferris Mountains.

An important concern was expressed by ranchers who graze livestock in the Adobe Town WSA during the winter months. They believed that the loss of routine access by motor vehicles would force them to curtail their use of the area. Some people thought that designation of either of the areas as wilderness would attract additional recreational use in amounts sufficient to cause degradation to the areas, and that this excessive use would be contrary to the best interests of either area. Other persons indicated that both WSAs were deserving of long-term protection, and that the only way to assure long-term protection of the area's wilderness values was to designate them as wilderness.

These issues have been considered in the development of the Proposed Action and alternatives and in the analysis of the environmental consequences of these actions.

PROPOSED ACTION AND ALTERNATIVES

Adobe Town WSA

Proposed Action - No Wilderness, Intensive Resource Management

The purpose of this alternative is to encourage the production of resource commodities such as natural gas, while intensively managing the area to protect other high-value noncommodity resources. Examples are: cultural resources, visual resources, paleontological resources, wildlife habitat, soils, and watershed.

No Action, Existing Management, No Wilderness

The objective of this alternative is to manage the area in a manner that would minimize surface disturbance and preserve existing natural values. Production of resource commodities such as natural gas would be emphasized.

This alternative limits the building of new roads to those needed for oil and gas exploration and requires reclamation of those roads when they are no longer needed for that purpose.

Partial Wilderness

The objective of this alternative is to recommend for designation as wilderness a tract of land 16,280 acres in size.

The remaining 65,591 acres of public lands would be removed from any constraints of wilderness management.

Wilderness Management

Under this alternative, the entire area (81,871 acres) would be recommended for designation as wilderness. This would exclude such activities as road building and mineral development or other activities that would impair wilderness values. Valid existing rights, however, such as those associated with pre-FLPMA leases would be recognized.

Ferris Mountains WSA

Proposed Action - Wilderness Management

Under this alternative, the entire WSA of 20,495 acres of public land would be recommended for wilderness. Wilderness designation would exclude such activities as road building, timber harvesting, mineral development, or other activities that would impair wilderness values. Livestock grazing would be authorized according to principles of good range management. Management objectives would include protection of wildlife habitat, visual resources; and opportunities for solitude and primitive, unconfined recreation.

No Action - Existing Management, No Wilderness

The primary objective of this alternative is to provide protection for wildlife habitat, visual resources, and primitive recreational opportunities in the Ferris Mountains, while allowing other present land uses to continue.

Livestock grazing would be authorized according to principles of good range management. Mineral development would continue. Should exploration and production occur, emphasis would be placed on minimizing the area of disturbance and reclaiming disturbed areas to their present condition. No permanent road system would be established in the area.

Management of Primitive Values

The objective of this alternative is to manage the entire Ferris Mountains WSA for its primitive values. Wildlife habitat would be protected, along with visual resources and opportunities for primitive recreation and solitude. The area would not be designated as wilderness.

The area would be withdrawn from mineral entry and administratively closed to mineral leasing. However, livestock grazing would be authorized according to principles of good range management. An off-road vehicle closure would be placed on the area allowing no vehicle use, except on existing roads and vehicle routes.

Enhanced Wilderness Management

Under this alternative, some 1,800 acres of private and state land adjacent to the WSA would be proposed for acquisition through land exchange and incorporated into the area under study. The entire area would be recommended for designation as wilderness.

Wilderness designation would exclude such activities as road building, timber harvesting, mineral development, or other activities that would impair wilderness values. Livestock grazing would be authorized according to principles of good range management. Management objectives would include protection of wildlife habitat, visual resources, naturalness, and opportunities for solitude and primitive, unconfined recreation.

PREFERRED ALTERNATIVES

For each WSA, the Proposed Action is the preferred alternative.

LONG-TERM ENVIRONMENTAL CONSEQUENCES

In Table S-1, the projected long-term environmental consequences of the Proposed Action and alternatives are compared. The information summarized in this table provides a basis for choice among the options for the decision maker and the public. For more detailed descriptions of the environmental consequences of the Proposed Action and alternatives, refer to Chapter 2.

TABLE S-1
COMPARATIVE SUMMARY OF PROJECTED LONG-TERM ENVIRONMENTAL CONSEQUENCES
OF THE PROPOSED ACTION AND ALTERNATIVES

ADOBE TOWN WSA

Resource	Proposed Action	Alternative 1 No Action	Alternative 2 Partial Wilderness	Alternative 3 All Wilderness
Wilderness Resources	Entire area managed under multiple-use concept. Projected development would impair entire area's wilderness values.	Entire area managed under multiple-use concept. Projected development would impair entire area's wilderness values.	16,280 acres of Adobe Town WSA designated as wilderness, resulting in protection of 20% of area. Remaining 80% would be managed under multiple-use concept, resulting in loss of wilderness values.	Approximately 30% of Adobe Town (26,000 acres) WSA would be protected and managed as wilderness. 55,871 acres would not be manageable as wilderness and would be subject to oil and gas development because of the presence of pre-FLMPA oil and gas leases.
Recreational Resources	Area becomes more accessible to motorized recreation because of development of road system for oil and gas exploration. Volume of use not significantly affected. Quality of hunting would decrease.	Area becomes more accessible to motorized recreation because of development of road system for oil and gas exploration. Volume of use not significantly affected. Quality of hunting would decrease.	Area becomes more accessible to motorized recreation becasue of a road system for oil and gas development in 80% of area. Volume of recreational use not signficantly affected.	Area becomes more accessible to motorized recreation because of development of road system for oil and gas development in 70% of the area. Volume of recreational use not significantly affected.

TABLE S-1--CONTINUED
COMPARATIVE SUMMARY OF PROJECTED LONG-TERM ENVIRONMENTAL CONSEQUENCES
OF THE PROPOSED ACTION AND ALTERNATIVES

ADOBE TOWN WSA

Resource	Proposed Action	Alternative 1 No Action	Alternative 2 Partial Wilderness	Alternative 3 All Wilderness
Livestock Grazing	Motorized access to WSA for grazing purposes greatly improved on a year-round basis	Motorized access to WSA for grazing purposes greatly improved on a year-round basis	Motorized access to nonwilderness portion of WSA greatly improved on a year-round basis. Livestock grazing would continue as at present in portion designated as wilderness.	Motorized access to portion of WSA containing pre-FLPMA oil and gas leases would be greatly increased because of development of oil and gas leases. Livestock grazing would continue as at present in all WSA.
Socioeconomics	Results in slight increase in production costs for oil and gas because of protective stipulations on development activities. No significant impacts to population, income, employment, and public attitudes.	Impacts similar to the Proposed Action. Oil and gas production costs may be lower under this alternative because of fewer measures to protect resources.	Designation of 20% of WSA as wilderness would cause an estimated long-term loss of 68 million dollars regional income, associated regional employment, and the use of the resource, an amount thought to be sufficient to supply Denver's residential needs for 8 years.	Designation of the WSA as wilderness would cause a long-term loss of regional income and employment 50% larger than that shown for Alternative 2. Oil and gas resources would be developed on 70% of the WSA or that part which contains pre-FLPMA oil and gas leases.

TABLE S-1--CONTINUED
COMPARATIVE SUMMARY OF PROJECTED LONG-TERM ENVIRONMENTAL CONSEQUENCES
OF THE PROPOSED ACTION AND ALTERNATIVES

ADOBE TOWN WSA

Resource	Proposed Action	Alternative 1 No Action	Alternative 2 Partial Wilderness	Alternative 3 All Wilderness
Geology and Mineralization	Mineral resources, including oil and gas, would be developed under this alternative.	Mineral resources, including oil and gas, would be developed under this alternative	20% of WSA would be removed from development of oil and gas or other minerals. Remaining 80% would be available for development.	30% of the WSA would be removed from development of oil and gas and other minerals. Remaining 70% o area would be available for development.
Wildlife	Some big game habitat losses would occur as a result of construction of roads, pipelines and other oil and gas related facilities. Overall, impacts to wildlife would not be severe.	Somewhat greater big game habitat losses would occur under this alternative then under the Proposed Action. This would be because of the absence of an ORV designation and specific efforts to minimize impacts to wildlife habitat.	Protection would be extended to 16,280 acres under a wilderness designation. The remainder of the WSA would be affected as in Alternative 1.	Protection would be extended to approximately 26,000 acres under this alternative. The remainder of the WSA would be affected as under the Proposed Action.
Cultural Resources	Impacts to cultural resources would be minimized since the number of cultural resource sites impacted by oil and gas activity would minimized. For all of the alternatives	Off-road vehicle use and artifact collecting would continue to adversely affect cultural resources.	This alternative would be beneficial to cultural resources since collecting of artifacts would be reduced in 16,280 acres of the WSA.	This alternative would be beneficial to cultural resources since collecting of artifacts would be reduced in 26,000 acres of the WSA.

TABLE S-1--CONTINUED
COMPARATIVE SUMMARY OF PROJECTED LONG-TERM ENVIRONMENTAL CONSEQUENCES
OF THE PROPOSED ACTION AND ALTERNATIVES

ADOBE TOWN WSA

Resource	Proposed Action	Alternative 1 No Action	Alternative 2 Partial Wilderness	Alternative 3 All Wilderness
	oil and gas development would result in recording and/or salvage of cultural resource sites and a corresponding increase in information collected; information not collected would be destroyed.			
Visual Resources	Visual resources would be adversely affected because of impacts to form, line, color, and texture of the landscape as a result of oil and gas development. Intensive management could minimize impacts to some extent.	Visual resources would be adversely affected because of impacts to form, line, color, and texture in the landscape as a result of oil and gas development.	Visual resources would be protected and would remain in a natural condition in 16,280 acres. The remainder would be impacted much like the Proposed Action.	Visual resources would be protected and would remain in a natural conditon in 26,000 ares of the WSA. The remainder would be impacted much like the Proposed Action and Alternative 1.
Wild Horses	Wild horses would be more easily viewed and would become more accustomed to man.	Wild horses would be more easily viewed and would become more accustomed to man.	Wild horses would be more easily viewed and would become more accustomed to man.	Wild horses would be more easily viewed and would become more accustomed to man.

TABLE S-1--CONTINUED
COMPARATIVE SUMMARY OF PROJECTED LONG-TERM ENVIRONMENTAL CONSEQUENCES
OF THE PROPOSED ACTION AND ALTERNATIVES

ADOBE TOWN WSA

Resource	Proposed Action	Alternative 1 No Action	Alternative 2 Partial Wilderness	Alternative 3 All Wilderness
Paleontological Resources	Development activity would bring more collecting of paleontological resources. At the same time, more information would be obtained about the fossil resources of the Washakie Basin, as required by stipulations.	Development activity would bring more collecting of paleontological resources. At the same time, more information would be obtained about the fossil resources of the Washakie Basin.	Development activity would bring more collecting of paleontological resources. At the same time, more information would be obtained about the fossil resources of the Washakie Basin. Fossil resources would receive enhanced protection due to limitations on access in 16,280 acres of the WSA.	Development activity would bring more collecting of paleontological resources. At the same time, more information would be obtained about the fossil resources of the Washakie Basin. Fossil resources would be protected in 26,000 acres of the WSA.

FERRIS MOUNTAINS WSA

Resource	Proposed Action All Wilderness	Alternative 1 No Action	Alternative 2 Primitive Management	Alternative 3 Enhanced Wilderness
Wilderness Resources	Wilderness resources would be protected with designation of a 20,495-acre WSA as wilderness	Wilderness resources would be lost in the long term because of the probability that impairment would	Wilderness character would be preserved if the area were to be withdrawn from mining claim location and	Wilderness resources would be protected with designation of 22,295 acres as wilderness.

TABLE S-1--CONTINUED
COMPARATIVE SUMMARY OF PROJECTED LONG-TERM ENVIRONMENTAL CONSEQUENCES
OF THE PROPOSED ACTION AND ALTERNATIVES

FERRIS MOUNTAINS WSA

Resource	Proposed Action All Wilderness	Alternative 1 No Action	Alternative 2 Primitive Management	Alternative 3 Enhanced Wilderness
Recreational Resources	Recreational activities would be protected inside the WSA. Access would not be limited.	Recreational activities would not receive protection. Activities would be degraded if development occurred.	Recreational activities would be protected if the area were to be withdrawn from mining claim location and withheld from mineral leasing.	Recreational activities would be protected as under the Proposed action. Access to the area would not be limited if this alternative were implemented.
Livestock Grazing	Livestock grazing would continue in the same manner and degree as at present. Building of range improvements would be allowed only if they did not impair wilderness values.	Livestock grazing would continue in the same manner and degree as at present.	Livestock grazing would continue in the same manner and degree as at present.	Livestock grazing would continue in the same manner and degree as at present. Building of range improvements allowed only if they did not impair wilderness values.
Socioeconomics	Little change in regional income and employment if the Proposed Action were implemented.	Little change anticipated in regional income and employment if this alternative were selected.	Little change anticipated in regional income and employment if this alternative were selected. Local public opinion seems	Little change anticipated in regional income and employment if this alternative were selected.

TABLE S-1--CONTINUED
COMPARATIVE SUMMARY OF PROJECTED LONG-TERM ENVIRONMENTAL CONSEQUENCES
OF THE PROPOSED ACTION AND ALTERNATIVES

FERRIS MOUNTAINS WSA

Resource	Proposed Action	Alternative 1 No Action	Alternative 2 Primitive Management	Alternative 3 Enhanced Wilderness
Geology and Mineralization	Opportunities to explore for and produce minerals would be curtailed under this alternative.	Mining claim location and mineral leasing would continue. Opportunities for mineral exploration and production would be protected.	Opportunities to explore for and produce minerals would be curtailed under this alternative if a mineral withdrawal were obtained.	Opportunities to explore for and produce minerals would be curtailed under this alternative.
Wildlife	Wildlife habitat would receive long-term protection by a wilderness designation.	Long-term protection of wildlife habitat is not assured under this alternative	Wildlife habitat would receive long-term protection under this alternative.	Wildlife habitat would receive long-term protection under this alternative.
Cultural Resources	Wilderness designation would generally provide protection for cultural resources so long as pedestrian traffic did not increase, in which case collecting of artifacts would likely increase.	Under this alternative, the potential exists for damage to cultural resources through resource development activity such as timber or minerals. Unless these activities occurred, the impacts would be the same as other alternatives.	Wilderness designation would generally provide protection for cultural resources so long as pedestrian traffic did not increase, in which case collecting of artifacts would likely increase.	Wilderness designation would generally provide protection for cultural resources so long as pedestrian traffic did not increase, in which case collecting of artifacts would likely increase.
Visual Resources	Wilderness designation would protect visual resources in the long term.	This alternative does not provide long-term protection for visual resources.	This alternative does not provide long-term protection for visual resources.	Wilderness designation would protect visual resources in the long term.

CHAPTER I

BACKGROUND INFORMATION

PURPOSE AND NEED FOR ACTION

The Adobe Town-Ferris Mountains WSA/EIS is being prepared in response to Section 603 of FLPMA of October 21, 1976. This law directs the Bureau of Land Management (BLM) to inventory, study and report to Congress, through the Secretary of the Interior and the President, the public lands suitable for inclusion in the National Wilderness Preservation System (NWPS).

BLM has established the end of fiscal year 1987 as its goal for completing wilderness studies and reporting wilderness suitability to the Secretary of the Interior. This EIS satisfies the study requirements for two of the 35 BLM wilderness study areas in Wyoming. FLPMA requires the Secretary, by October 21, 1991, to report his recommendations to the President. The President has until October 21, 1993, to send his recommendations to Congress, as only Congress can designate any of the study areas as wilderness.

The purpose of this EIS is two-fold. The first purpose is to analyze the effects on present or potential resource uses of including two WSAs in south-central Wyoming in the NWPS. The second purpose is to make recommendations, based on the findings of this document, to the Secretary of the Interior on inclusion of the WSAs in the NWPS.

WILDERNESS STUDY AND PLANNING PROCESS

The Adobe Town WSA is in the Divide Resource Area of the Rawlins District and the Salt Wells Resource Area of the Rock Springs District. The Ferris Mountains WSA is in the Medicine Bow Resource Area of the Rawlins District. Both WSAs are covered by one management framework plan (MFP), the Divide Basin MFP. The wilderness study and EIS for the entire Adobe Town WSA is being done by the Rawlins District, with periodic review and input by the Rock Springs District.

The Divide Basin MFP process began in early 1981. Multiple-use recommendations were completed in the summer of 1982. This EIS, in conjunction with congressional action, will serve to finalize the MFP recommendations. It will not include a management plan if either area is designated as wilderness. A wilderness management plan will be developed, based on any special wilderness management considerations incorporated by Congress. Areas not designated as wilderness and released by Congress will be returned to normal multiple-use management without the constraints of BLM's Wilderness Interim Management Policy (see the Standard Operating Procedures section for a discussion of this policy).

Steps used in the preparation of the MFP are:

1. Identification of issues
2. Development of planning criteria
3. Inventory data and information collection
4. Unit Resource Analysis (present resources and analysis)
5. Formulation of analysis of Management Framework Plan Alternative (MFP Step 1)
6. Management Framework Plan Recommendations (MFP Step II and draft EIS)
7. Management Framework Plan decisions (MFP Step III and EIS)
8. Monitoring and evaluation

PLANNING CRITERIA

BLM planning regulations provide the means by which the District Manager can guide the development of the MFP and provide parameters for analysis and decision making. Criteria are developed for each resource element (such as wilderness) that represents an issue in the planning effort. The planning regulations also provide for national and State Director guidance to district managers. For the wilderness program, national planning criteria have been developed by BLM that will be used in the wilderness study process. All BLM wilderness recommendations, both

suitable and nonsuitable for preservation as wilderness, will be justified on the basis of the two planning criteria and six quality standards listed below.

Criterion Number 1, Evaluation of Wilderness Values

Consider the extent to which each of the following contributes to the overall value of an area for wilderness purposes.

1. Mandatory wilderness characteristics: size, naturalness and outstanding opportunities for solitude or primitive, unconfined recreation.
2. Special features: the presence or absence and quality of ecological, geological or other features of scientific, educational, scenic, or historical value.
3. Multiple-resource benefits: the benefits to other multiple-resource values and uses that only wilderness designation of the area could ensure.
4. The extent to which wilderness designation of the area under study would contribute to expanding the diversity of the NWPS from the standpoint of the factors listed below:

    a. Expanding the diversity of natural systems and features, as represented by ecosystems and landforms.

    b. Assessing the opportunities for solitude or primitive recreation within a day's driving time of major population centers.

    c. Balancing the geographic distribution of wilderness areas.

Criterion Number 2, Manageability

The area must be capable of being effectively managed to preserve its wilderness character.

Quality Standards for Analysis and Documentation

Standard Number 1, Energy and Mineral Resource Values

Recommendations as to an area's suitability or unsuitability for wilderness designation will reflect a thorough consideration of any identified or potential energy and mineral resource values.

Standard Number 2, Impacts on Other Resources

Consider the extent to which other resource values or uses of the area would be forgone or adversely affected as a result of wilderness designation.

Standard Number 3, Impact of Nondesignation on Wilderness Values

Consider the alternative use of land under study if the area is not designated as wilderness, and the extent to which the wilderness values of the area would be forgone or adversely affected as a result of this use.

Standard Number 4, Public Comment

In determining whether an area is suitable or unsuitable for wilderness designation, the BLM wilderness study process will consider comments received from interested and affected public groups at all levels—local, state, regional, and national. Wilderness recommendations will not be based exclusively on a vote-counting majority rule system. BLM will develop its recommendations by considering public comment in conjunction with its analysis of a wilderness study area's multiple resource and social and economic values and uses.

Standard Number 5, Local Social and Economic Effects

In determining whether an area is suitable or unsuitable for wilderness designation, BLM will give special attention to adverse or favorable social and economic effects, as identified through the wilderness study process, that wilderness designation will have on local areas.

Standard Number 6, Consistency with Other Plans

In determining whether an area is suitable or unsuitable for wilderness designation, BLM will consider the extent to which the recommendation is consistent with officially approved and adopted resource-related plans of other federal agencies, state and local governments, and Indian tribes (and the policies and programs contained in such plans), as required by FLPMA and BLM planning regulations.

MAJOR ISSUES AND CONCERNS

In November 1978, BLM began the wilderness review by preparing descriptions of those areas of 5,000 or more roadless acres of public lands and those areas of less than 5,000 acres contiguous to other wilderness or wilderness study areas. These areas were reviewed by the public, closely inventoried by BLM, and reviewed by the Wyoming State Director in 1979-80. The State Director then released his final decision on the wilderness inventory, designating 48 areas in Wyoming as WSAs, two of which were Adobe Town and the Ferris Mountains. (Final decision: Wyoming Wilderness Inventory, November 1980.) The public was allowed to protest any of the final decisions.

The designation of the Adobe Town area as a WSA in 1980 was protested by an oil company that has oil and gas leases within the WSA boundaries. Oil company representatives disagreed with the finding by BLM that Adobe Town did possess wilderness characteristics and should be designated as a WSA. The protest was denied by the State Director, and the decision was appealed by the oil company to the U.S. Department of the Interior Board of Land Appeals (IBLA). The IBLA decision affirmed the earlier decision by the State Director, and, as of the spring of 1982, the Adobe Town area officially became a WSA.

On December 30, 1982, the Secretary of the Interior released a decision amending the previous wilderness inventory decision in accordance with three IBLA decisions. This decreased the number of BLM WSAs in Wyoming to 35 and reduced the size of some of these 35 WSAs.

Split-estate lands in the Adobe Town WSA were eliminated from study. Split-estate lands are those where the surface is owned by the federal government and the mineral estate is owned by the state of Wyoming. Eliminating split-estate lands reduced the acreage of the Adobe Town WSA from 85,710 acres to 81,871.

Throughout the inventory stage of the wilderness review process, the public has had opportunities to attend meetings, open houses or other informal meetings, in addition to providing written information to BLM. From this process a number of issues have been identifed. The issues are:

Mineral Development

Wilderness designation could have an adverse effect on mineral exploration and development, particularly in the Adobe Town WSA where potential for natural gas production is known to be high.

Livestock Grazing

Local ranchers were concerned that a wilderness designation would adversely affect the livestock industry in a variety of ways:

1. Possible reduction or elimination of livestock grazing in designated wilderness.
2. Reduced access by motor vehicles for moving and feeding livestock and maintaining and constructing range improvements. Access through the area to adjacent public and private lands would be cut off. There would be an increased burden on livestock operators from visitors seeking assistance and information. Traditional use patterns would be disrupted and there would be increased incidence of litter, vandalism and fire.

Recreation and Use Opportunities

Some people thought that elimination of vehicular access in a wilderness designation would be detrimental for hunting and other vehicle-oriented forms of recreation, particularly in the Adobe Town WSA. Others thought that wilderness designation in general would attract additional users to the area. This increase in use could be in excess of the optimum level for the area. This would decrease the quality of recreation and solitude and increase impacts on other uses/users, both inside the areas and on adjacent public and private lands. Some individuals thought that wilderness designation would destroy the very qualities that could be protected through other means. They feared that the cumulative impacts of present and additional use, which would result from wilderness designation in the Ferris Mountains, would exceed the area's capacity.

Others expressed the opinion that wilderness designation would preserve outstanding opportunities for primitive recreation and solitude,

which otherwise would be lost. They also thought additional advantages of wilderness designation would be that high-scenic values and significant cultural and paleontological resources would be preserved.

Socioeconomic Impacts

Livestock operators and mineral industry representatives expressed concerns that there would be a loss of livestock and mineral income through wilderness designation. Some livestock operators believed that a wilderness designation would displace their operations and force them out of business. Other people thought that a wilderness designation would attract additional users and adversely affect the livestyle of adjacent landowners. In contrast, some area residents believed that nondesignation would invite land uses that would adversely affect the area and produce adverse effects on their lifestyles.

Wildlife/Wildland Values

Many concerned people stated that a wilderness designation may be the only way to ensure long-term protection for wildlife habitat and primitive recreational opportunities.

Others thought that the Ferris Mountains have high-quality recreation and solitude opportunities because of low use, and that these primitive values will be lost with increased visitor use.

Wilderness Need

Diverse views have been expressed on this topic. Some respondents believe both of the WSAs are needed, and that they will add ecosystems to the NWPS which are not presently represented, thereby improving diversity. Other people believe there is enough wilderness and the addition of more will serve no useful purpose.

Water Resources

People opposed to wilderness stated that one of their objections to wilderness designation is the lack of drinking water for visitors in the Adobe Town WSA. People favoring wilderness said that lack of drinking water is unimportant and that wilderness designation will protect watersheds and eliminate soil erosion.

STANDARD OPERATING PROCEDURES

Interim Management Policy

During the period of the wilderness review process and until Congress acts on the President's recommendations, the Secretary of the Interior is required to manage wilderness study areas so as not to impair their suitability for preservation as wilderness, subject to certain exceptions and conditions. The policy and guidelines under which BLM will manage the lands under wilderness review is known as the Interim Management Policy.

There are two goals of the Interim Management Policy: (1) to ensure that WSAs, which now satisfy the wilderness definition in Section 2(c) of the Wilderness Act, will satisfy that definition when the Secretary sends his wilderness recommendation to the President and until Congress acts on that recommendation; and (2) to ensure that, by the time the Secretary sends his recommendation to the President, the area's wilderness values have not been degraded, relative to other uses and values for other purposes, and that the Secretary's recommendation concerning the area's suitability or nonsuitability for wilderness will be constrained.

There are two exceptions to this policy. The first is that existing uses may continue in the same manner and degree as on the date that FLPMA was approved. Such uses are referred to as "grandfathered."

The second exception involves valid existing rights as of October 21, 1976, the date FLPMA was passed. An example would be an oil and gas lease issued prior to the passage of FLPMA. The owner of such a lease might exercise his right to explore and produce oil and gas, even if that activity were to impair the area's wilderness values. Copies of the complete Interim

Management Policy and Guidelines for Lands under Wilderness Review are available at any BLM office or may be obtained by writing or calling the Rawlins District office.

Wilderness Management Policy

BLM's Wilderness Management Policy was published in September 1981. It details BLM's management of wilderness areas. The wilderness management policy regulates use of designated wilderness and contains information about specific programs, such as livestock grazing, and how they will be affected by a wilderness designation. Copies of the Wilderness Management Policy are also available from any BLM office.

CHAPTER II

ANALYSIS OF WILDERNESS STUDY AREAS

PART I - ADOBE TOWN WILDERNESS STUDY AREA

Location and Setting

The Adobe Town WSA lies within the physiographic province known as the Wyoming Basin in south-central Wyoming. It is located in Sweetwater County and contains lands in both the Rawlins and Rock Springs BLM districts (Map 1).

Rock Springs and Rawlins, Wyoming, and Craig, Colorado, are the largest communities near the WSA. Adobe Town is within 5 hours driving time of a number of major metropolitan areas in the Rocky Mountain Region.

The vegetation in the Adobe Town WSA is sparse and visually dominated by shrubby plants such as big sagebrush, black greasewood, and several species of saltbush. Grasses and forbs are intermingled with the shrubs, and there are a few junipers in the area. The plants supply food and cover for livestock, wildlife and wild horses.

Soils consist of clays and clay loams overlain, for the most part, by stabilized sand dunes.

Development of Alternatives

A series of alternatives ranging from All Wilderness to No Wilderness was developed to analyze the Adobe Town WSA. The All Wilderness alternative recommends the entire WSA for designation as wilderness. Two alternatives were developed that recommend no part of the WSA for wilderness designation. These were the Proposed Action and the No Action alternatives. The Proposed Action includes a list of measures to help mitigate the adverse effects of intensive development of natural gas resources. The No Action alternative is similar to the Proposed Action, but it contains fewer measures designed to offset the adverse effect of mineral development. The Partial Wilderness alternative recommends a portion of the unit for wilderness designation.

Two guidelines were used to arrive at the Partial Wilderness alternative: (1) to resolve conflicts between wilderness and other uses, and (2) to improve long-term wilderness manageability of the WSA.

These four alternatives appear to be diverse, resulting in different management of the WSA. This would be true except for the oil and gas leasing situation in Adobe Town. BLM has been directed by Congress to accommodate certain activities, existing uses, and private rights in designated wilderness that generally do not conform to wilderness preservation and wilderness use. The BLM Wilderness Management Policy states that valid existing rights at the date of passage of FLPMA will be recognized and accommodated. Regardless of the management alternative BLM might chose, oil and gas development could occur on pre-FLPMA leases.

Nearly 70 percent of the Adobe Town WSA contains oil and gas leases that were issued before the passage of FLPMA. These pre-FLPMA lease holders have been recognized as having valid existing rights. This means that they may explore, develop, and produce oil and gas, even if the area is designated as wilderness and the development activity will impair the wilderness values of the area. Wilderness character will be impaired by building roads, drilling sites, production facilities, and pipelines.

Drilling sites would be expected to be located at a density of one well every ½ to 1 mile. If only the pre-FLPMA leases were developed, this could ultimately mean that more than 100 wells would be drilled. Therefore, for the majority of the area, oil and gas operations would be the dominant activity in the future.

For the areas containing only post-FLPMA oil and gas leases, the situation would be different. Under Wilderness Management, oil and gas leases would not be developed if wilderness values would be impaired. There are several tracts of post-FLPMA leases in the WSA. However, the only tract of post-FLPMA leases in excess of 5,000 acres lies in the east-central part of the WSA. (Areas less than 5,000 acres in size do not meet the criteria for wilderness.) This area was selected for analysis as the Partial Wilderness alternative. It encompasses 16,280 acres and is the only part of the WSA considered manageable as wilderness.

Alternatives Considered but Dropped

There were no additional alternatives considered for the Adobe Town WSA.

Proposed Action and Alternatives

Table 2-1 shows the number of acres involved in the Proposed Action and alternatives.

TABLE 2-1
ACRES BY ALTERNATIVE ADOBE TOWN WSA

Alternative	WSA Acreage	Acreage Recommended for Acquisition	Total Acres Proposed
Proposed Action	81,871	0	81,871
No Action	81,871	0	81,871
Partial Wilderness	16,280	0	16,280
All Wilderness	81,871	0	81,871

Proposed Action - No Wilderness, Intensive Resource Management

The objective of this alternative is to encourage the production of resource commodities such as livestock forage and natural gas, while intensively managing the area to protect the high value, noncommodity resources of the area. Examples of these resources are visual, cultural, paleontological, wildlife habitat, soils, and watershed. Livestock grazing would be authorized according to principles of good range management. Protection of noncommodity resources would be achieved through implementation of the following measures.

Off-Road Vehicle Designation

Travel would be limited to existing roads, vehicle routes, dry washes, and the new roads that would be authorized to facilitate mineral exploration. The designation would generally require vehicles to remain on the roads, vehicle routes, and washes but would allow off-road travel for legitimate activities such as retrieving game animals, managing or moving livestock, and maintaining range improvements. Hill climbing and other damage-causing off-road travel use would not be allowed.

Road and Pipeline Location

Roads and pipelines would be located in areas that would minimize surface disturbance. Roads would be constructed to avoid stabilized sand dunes and fragile badland features; they would be rehabilitated when no longer needed for that purpose. Pipelines would be located along existing roads. New roads and pipelines would not be constructed through Adobe Town Rim and Skull Creek Rim, except along corridors of existing roads and pipelines.

Reclamation of Disturbed Areas

If they were no longer needed, roads and oil and gas drilling locations would be rehabilitated as closely to the original contours as possible. Native vegetation would be established on these locations, and highwalls would be removed at oil and gas drilling locations.

Unitized Gas Field Development Plans

Development plans would be required for unitized gas fields and would be developed in cooperation with the oil companies. The objective would be to plana network of roads, pipelines and dilling locations that would meet the needs of the oil and gas industry, and at the same time minimize unnecessary disturbance of soils and vegetation. Such planning has the potential to reduce aggregate road and pipeline construction costs.

Standard Operating Procedures

Standard operating procedures would protect cultural, visual, and paleontological resources.

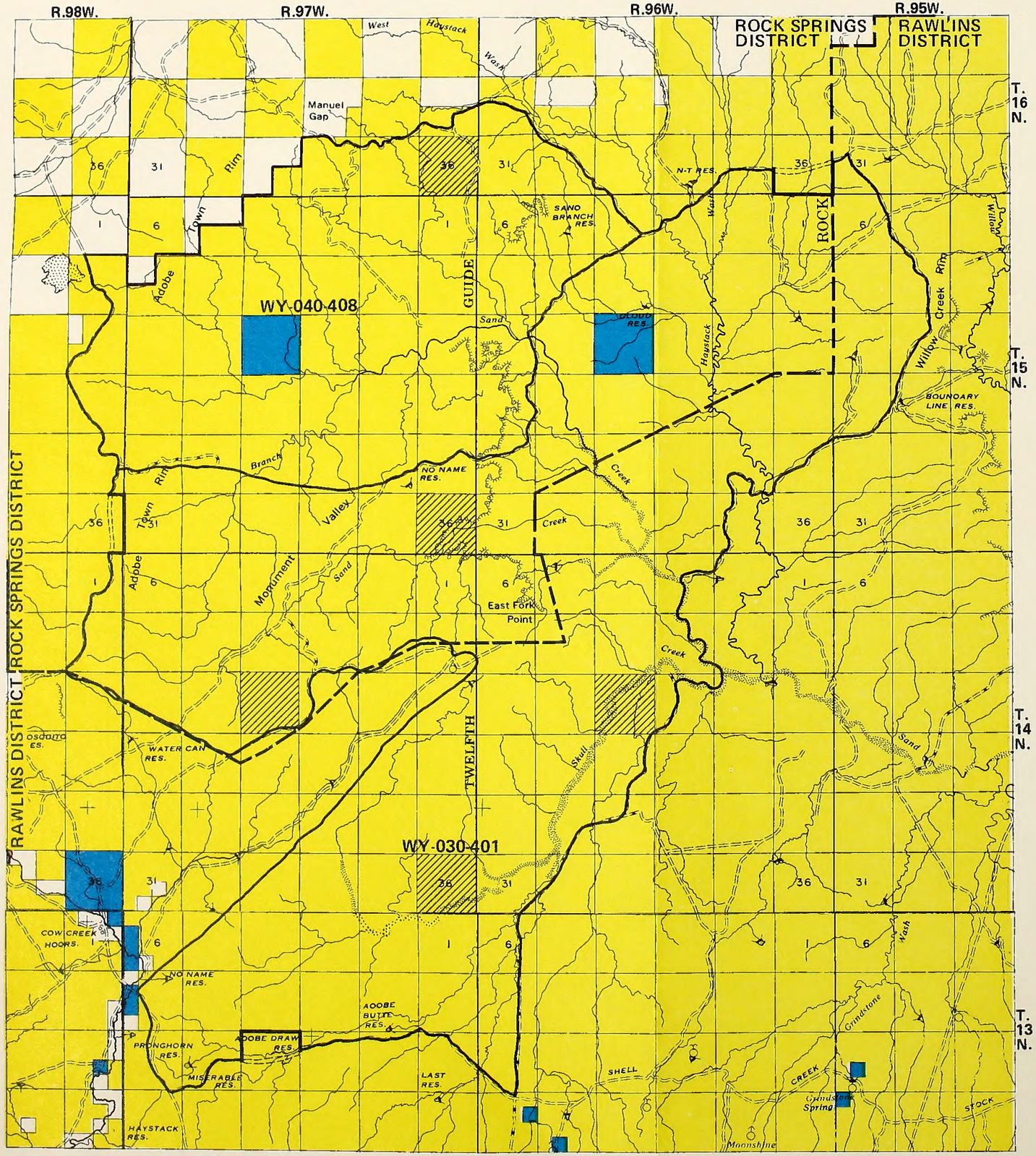
Alternative 1 - No Action, Existing Management

The objective of this alternative would be to manage the area in order to minimize surface disturbance and preserve existing natural values. Production of resource commodities such as natural gas would be emphasized.

This alternative would limit new road building to those areas needed for oil and gas exploration and would require reclamation of those roads when they were no longer needed. No additional specific management and protection measures would be included with this alternative.

Wilderness values would not be a consideration under this alternative.

Livestock grazing would be authorized according to principles of good range management.



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Wilderness Study Area Boundary

Public Land

State Land

Private Land

Inholdings of Split Estate Lands

Map 1
Adobe Town WSA
WILDERNESS STUDY AREA

Alternative 2 - Partial Wilderness

The objective of this alternative would be to designate a 16,280-acre tract of land as wilderness. The area is shown on Map 2 and contains no pre-FLPMA oil and gas leases or inholdings of non-BLM lands. The remaining lands in the WSA, 65,591 acres, would be managed as specified under the Proposed Action. Management objectives would include protection of wilderness values, wildlife habitat, visual resources, cultural resources, paleontological resources, and the fragile badland features of the area.

Livestock grazing would be authorized according to principles of good range management.

Alternative 3 - All Wilderness

Under this alternative, the entire area, 81,871 acres, would be recommended for designation as wilderness. This would exclude activities such as road building and mineral development or other activities that would impair wilderness values. Valid existing rights, however, such as those associated with pre-FLPMA leases would be recognized. Development of pre-FLPMA oil and gas leases would probably occur as in the Proposed Action.

Management objectives would include protection of wilderness values, wildlife habitat, visual resources, cultural resources, paleontological resources, and the fragile badland topography characteristic of the area. Livestock grazing would be authorized according to principles of good range management.

Unaffected Aspects of the Environment

The following items were analyzed to determine whether the Proposed Action or any of the alternatives would have an impact on them.

1. Areas of critical environmental concern
2. Forestry
3. Air Quality
4. Climate
5. Wild or scenic rivers (designated or recommended)
6. Soils
7. Vegetation
8. Topography
9. Floodplains, wetlands, prime or unique farmlands
10. Water quality, prime or sole source of drinking water

None of these items would be significantly affected by the Proposed Action or alternatives. Therefore, these items will not be analyzed further in this EIS.

Affected Environment and Environmental Consequences

Introduction

The format of this EIS was designed so that the affected environment and environmental consequences could be described in one section, and so that the account of BLM's analyses could be more easily followed and understood. The description of the resources appearing in the affected environment and the description of the impacts that would result from the implementation of the Proposed Action or any of the alternatives appears in the environmental consequences subdivisions of this chapter. In the mitigation measures, ways are suggested in which impacts could be made less severe. Unavoidable adverse impacts, short-term use versus long-term productivity, and irreversible and irretrievable commitments of resources are identified, where appropriate, along with the impacts for each resource. Impacts on the affected resources are analyzed below.

These resources are: wilderness, recreation, livestock grazing, geology and mineralization, wildlife, socioeconomics, cultural resources, visual resources, wild horses, and paleontology.

There are two nonwilderness alternatives and two alternatives in which all or part of the WSA is recommended for wilderness designation. These alternatives are grouped in this manner because of the method of analysis. The Proposed Action and No Action alternatives have been analyzed together, and the Partial Wilderness and All Wilderness alternatives have been analyzed together. They have been analyzed in this manner in order to streamline the analysis and better illustrate the contrasts between them.

The following assumptions are being made for the purpose of analyzing the Proposed Action and alternatives.

1. Because the length of short-term and long-term impacts varies for each resource value, no general assumption has been made for the lengths of short-term or long-term impacts. Assumptions will be stated, if appropriate, in each section.
2. Management of wildlife populations will continue through harvesting authorized by the Wyoming Game and Fish Department, and the maximum population levels will remain as stated in the objectives of the Wyoming Game and Fish Department's strategic plan.
3. All necessary funding and manpower will be available to implement the Proposed Action and alternatives as stated in Chapter I of this EIS.

Wilderness

Affected Environment

Wilderness Values. The Adobe Town WSA is located southwest of Rawlins, about 25 miles south of Interstate 80, in Sweetwater County. The name Adobe Town has been applied to a 40to 50-square mile area near the center of the Washakie Basin, where erosion has created unusual badland configurations. This is a remote area, bounded on the west by a broad, relatively undissected, west-sloping plain that is covered with stabilized sand dunes and alluvium. The flat terrain of this plain breaks abruptly at Adobe Town Rim into a maze of badlands that form small basins, ledges and alcoves at lower elevations east of the rim. From a few hundred feet to several miles east of Adobe Town Rim, at still lower elevations, small isolated haystack or house-shaped buttes are located (photographs 1 and 2). These give the area its name and form the area known as Monument Valley.

This landform pattern repeats itself with relatively flat, sand-dune covered plains east of Monument Valley and gradually becomes Skull Creek Rim. Skull Creek Rim is similar to Adobe Town Rim, although it is much more extensive in both length and width. Skull Creek Rim is dissected by Sand Creek and its tributaries, creating colorful canyons and numerous small drainages (photographs 3 and 4).

Naturalness. Manmade intrusions in the Adobe Town WSA are minor and consist of active and abandoned oil and gas drilling locations, locations, roads, trails, and seismographic lines associated with oil and gas explorations. There are livestock watering reservoirs, abandoned wild horse traps, and abandoned enclosures for livestock feed storage. These intrusions are not particularly noticeable and have a minimal impact on the total area. Many of these intrusions are difficult to find, as evidenced by reports submitted to BLM by the mineral industry during the intensive wilderness inventory (Holmes 1979).

Most of the reservoirs were constructed to provide water for livestock. They provide an additional benefit of making water available for wild horses and wildlife. Many of the reservoirs no longer hold water, because of silting or washing out; others are in good condition. All of the reservoirs' earthen dams are overgrown with native vegetation and blend into the surroundings; most look like the adjacent landforms.

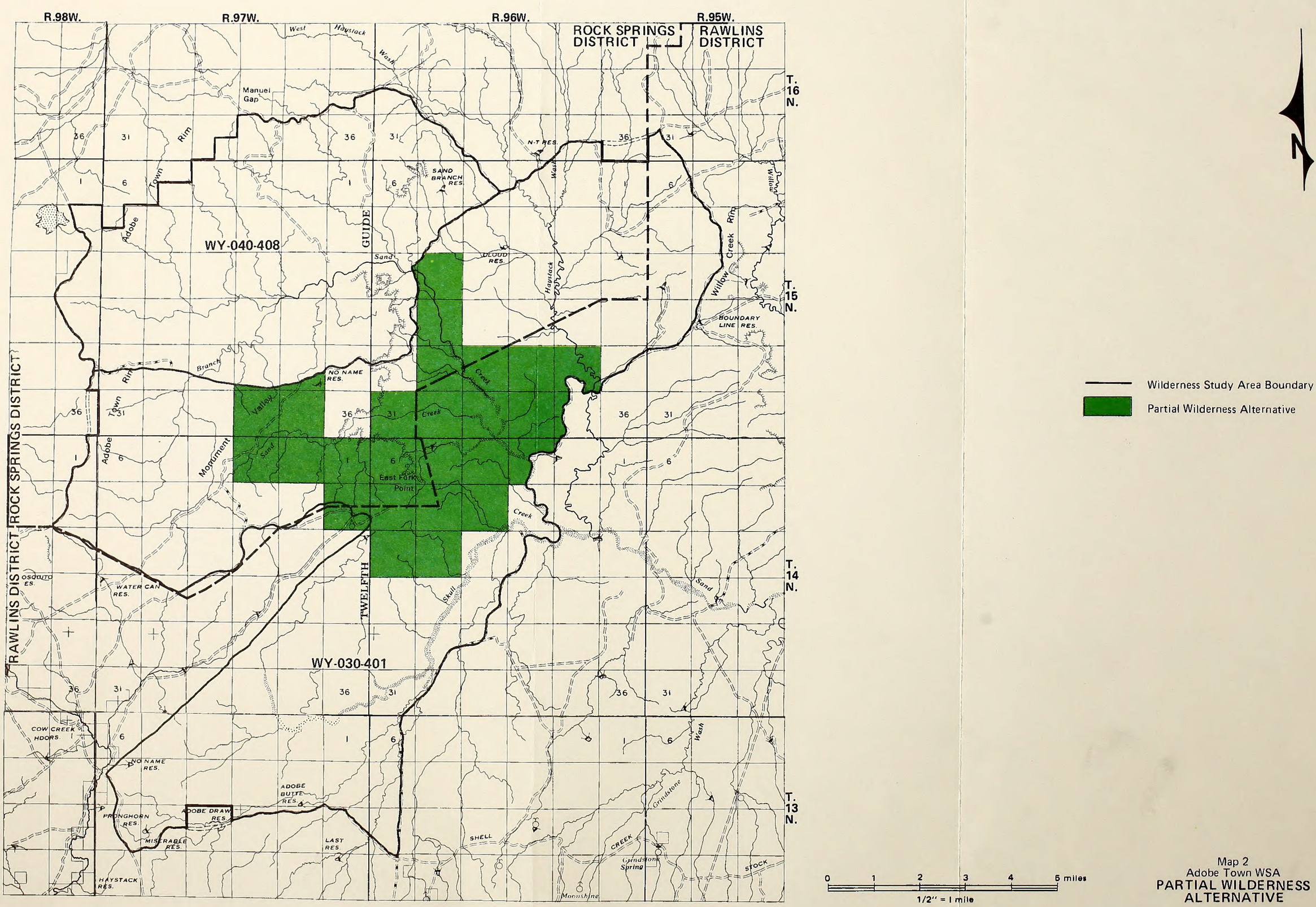
Although no discoveries of oil and gas were made before the passage of FLPMA, an almost continuous exploration program has been conducted in the area, including seismographic work and drilling of a number of exploratory wells. These activities have left their mark on the area, although the impacts have been relatively minor (photograph 5).

In conclusion, the area generally appears to have been affected primarily by the forces of nature; the imprint of man is minimal.

Size. Adobe Town is made up of two contiguous WSAs, WY-040-408 in the Rock Springs District and WY-030-401 in the Rawlins District. Together they contain 81,871 acres and constitute the largest BLM WSA in Wyoming. Size, which is one of the Adobe Town WSA's important attributes, contributes greatly to the wilderness character of the area.

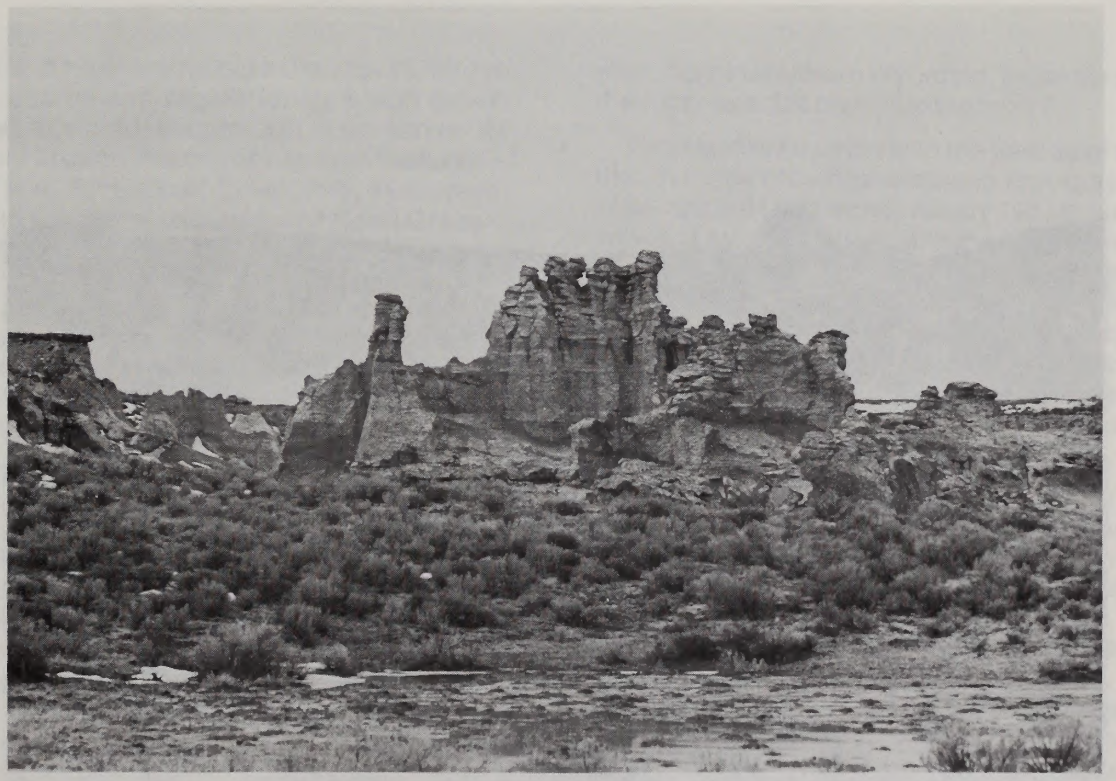
Outstanding Opportunities for Solitude and/or a Primitive, Unconfined Type of Recreation. The conclusion in the intensive wilderness inventory was that the area possessed outstanding opportunities for a primitive, unconfined type of recreation. Activities identified as outstanding were hiking, sightseeing and photography, which complement each other. Short backpacking excursions could be taken, but all water would have to be carried by the user because potable water sources would not be available. These opportunities exist throughout the two WSAs.

Hiking or backpacking in the area would be an interesting and educational experience, particularly for typical backpackers who have done most of their backpacking and hiking in the



Map 2
Adobe Town WSA
PARTIAL WILDERNESS ALTERNATIVE

PHOTOGRAPH 1. Typical badland formations in the Adobe Town WSA.



PHOTOGRAPH 2. Small isolated buttes with sagebrush-covered sand dune in the foreground.

PHOTOGRAPH 3. Skull Creek Rim showing spring runoff in Sand Creek.

PHOTOGRAPH 4. Small drainage eroding Skull Creek Rim.

PHOTOGRAPH 5. Past oil and gas exploration is evidenced by this dry hole marker and drilling location that has yet to return to a natural-appearing condition.

mountains. A hiker would have the opportunity to view the wildlife and vegetation of a high desert ecosystem in a natural condition. A person could hike in and around the major badland features—Adobe Town Rim, Skull Creek Rim, Monument Valley and the major tributaries of Sand Creek—and view and photograph a variety of interesting features, ranging from the geological features of the area to wildlife and wild horses. Examples of wildlife in the area are mule deer, pronghorn antelope, coyotes, bobcats, an occasional mountain lion, cottontails and jack rabbits, a variety of raptors and other birds, snakes, lizards, and other small mammals (photograph 6). Large numbers of wild horses also inhabit the area. Previous BLM management plans have designated Adobe Town as a wild horse management area.

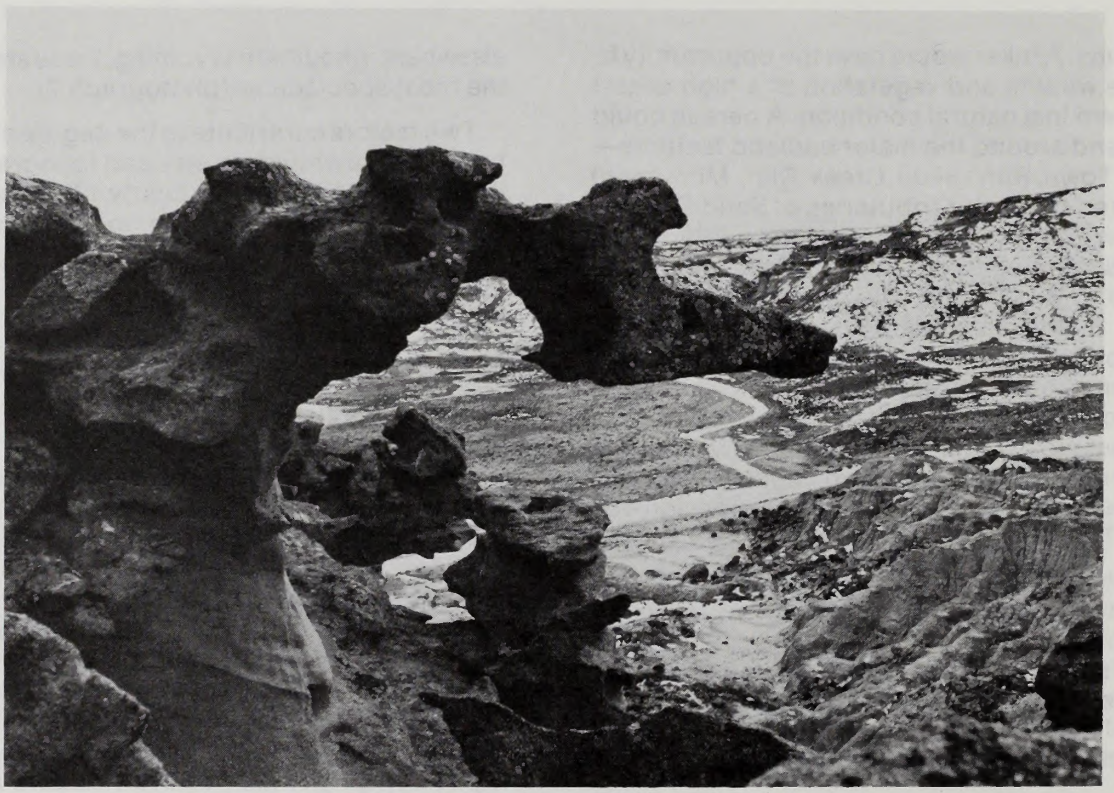
Primitive, overnight camping areas are plentiful and provide shade, shelter, and scenic views for the camper. Shelter can be found in the leeward sides of stabilized sand dunes, in draws or washes, or in the midst of the rocky, eroded rims. These types of shelters protect the user from frequent winds that are characteristic of the area.

The erosional landforms are perhaps the area's most outstanding feature; they are the focal point of the area. Although similar landforms are found elsewhere in southern Wyoming, these are perhaps the most spectacular (photograph 7).

Two factors contribute to the degree of solitude that the area provides: size and topography. The WSA totals 81,871 acres, nearly 128 square miles, which is sufficient to accommodate a fairly large number of visitors. The rugged topography provides seclusion throughout most of the WSA; the scenic rims provide a maze of small canyons and draws, making it difficult to see other visitors in the area. The amount or degree of seclusion would be equal to an alpine wilderness area in a national forest.

In Adobe Town, the visitor can disappear quickly in the rim areas by going around a corner, up a draw, or into the next canyon. Elsewhere the terrain is hummocky because the surface is covered by stabilized sand dunes. At several locations in the open plains area of Adobe Town visibility experiments were made using human subjects. In areas covered with stabilized sand dunes, a hiker of average height disappeared from view in about one-fourth of a mile. From high vantage points, however, visitors and their camps would be readily visible.

PHOTOGRAPH 6. Whitetail jack rabbit at Adobe Town Rim.



PHOTOGRAPH 7. Spectacular land forms have resulted from wind and water erosion in Adobe Town. Shown above is "Puff the Magic Dragon."

Quality is a function of the combination of interrelated values that an area exhibits and the resulting uniqueness of that combination. In this regard, Adobe Town exhibits high quality.

Special Features. The Adobe Town area contains a sizeable herd of wild horses. BLM's wild horse management plan calls for a herd of 500 animals. (See the Wild Horse section for more information.)

The area is also well known for its fossils. Fossil remains of mammals are numerous and widely distributed throughout the area. (See the Paleontological section for more information.)

Diversity in the National Wilderness Preservation System. An objective of the wilderness study policy is to determine the extent to which wilderness designation of the area under study would contribute to expanding the diversity of the NWPS from the standpoint of the following factors.

1. Ecosystems and Landforms

   The classification of ecosystems is based on an integration of the natural factors of climate, vegetation, soils, and landforms. Wilderness designation presents an opportunity to preserve examples of the basic ecosystems and landforms present in the region in an unimpaired condition for future generations. Although there are other land-classification systems available, BLM has selected the Bailey-Kuchler Ecosystems classification of the United States, a system that was utilized by the U.S. Forest Service in its RARE II and further planning wilderness studies (Bailey 1976 and Kuchler 1966).

   Under this system, the Adobe Town WSA is classified as saltbush-greasewood and sagebrush steppe vegetative types within the Wyoming Basin Ecoregion. No ecosystem in the Wyoming Basin has been included in the NWPS or recommended to Congress by the President for wilderness designation.

2. Opportunities for Solitude or Primitive Recreation Within a One-Day Driving Time (5 hours) of Major Population Centers

   The Adobe Town WSA is within a one-day driving time of nine major Standard Metropolitan Statistical Areas (SMSAs): Boulder, Denver, Fort Collins, and Greeley in Colorado; Salt Lake City, Orem, Provo, and Ogden in Utah; and Casper, Wyoming. Most of the existing and potential recreational use originates from these and other local population centers. There is considerable acreage of designated wilderness within 250 miles of the these population centers. Those acreages are as shown in Table 2-2.

TABLE 2-2

ACREAGES OF DESIGNATED WILDERNESS WITHIN 250 MILES OF MAJOR POPULATION CENTERS

Population Center	Acres of Designated Wilderness
Boulder	2,793,229
Denver	2,793,299
Greeley	2,674,599
Fort Collins	2,734,599
Casper	4,022,461
Salt Lake City	1,513,975
Orem	967,843
Provo	967,843
Ogden	2,214,767

3. Balancing the Geographic Distribution of Wilderness Areas

   There are 2,194,080 acres of designated national forest wilderness in six areas in the state of Wyoming: the Bridger and Fitzpatrick in the Wind River Range; Savage Run in the Medicine Bow Range; and the Teton, Washakie, and North Absaroka in the Absaroka Range. There are 20 administratively endorsed wilderness study areas and eight areas designated for further planning in the national forest system of Wyoming. There are 35 BLM WSAs in Wyoming, most of which are in the western two-thirds of the state. In summary, there is substantial acreage of designated and potential wilderness in close proximity to the WSA.

Manageability. Factors that affect BLM's ability to manage the Adobe Town WSA as wilderness are landownership and pre-FLPMA oil and gas leases.

1. Landownership

   The Adobe Town WSA contains nonpublic lands. There are two sections of state land

and five sections of split estate lands (nonfederal mineral estate) within its boundaries. These inholdings total 4,427 acres, and the owners have access rights to these lands for developmental purposes. Any development of these lands would require road building, which would impair the wilderness value of the WSA.

2. Oil and Gas Leases

BLM has been directed by Congress to accommodate certain activities, existing uses, and valid existing rights in designated wilderness areas, even though these activities are generally nonconforming to wilderness preservation. This is of particular importance to the Adobe Town WSA. The majority of the Adobe Town WSA contains oil and gas leases that were issued before the passage of FLPMA. These pre-FLPMA lease holders have been recognized as having valid existing rights. This means that exploration, development and production of oil and gas could take place in the Adobe Town area on those leases, even if the area were designated as wilderness and that activity would impair wilderness values.

Oil and gas leases for the WSA were examined and classified as either pre-FLPMA or post-FLPMA. Pre-FLPMA leases were issued before October 21, 1976, post-FLPMA leases after that date. If a section of land was found to contain any pre-FLPMA leases, all of it was classified as pre-FLPMA. Sections containing no pre-FLPMA leases were classified as post-FLPMA. Map 3 shows the WSA as mostly pre-FLPMA, with several blocks of post-FLPMA leases, only one of which is larger than 5,000 acres, the minimum acreage BLM can consider under Section 603 of FLPMA for wilderness designation.

Deep exploration for natural gas has been conducted since 1978, both in and immediately adjacent to the WSA. Some of the wells have potential for commercial production of natural gas. The entire WSA is contained within unitized oil and gas fields, and exploration is progressing. Because of the abundant supply of available natural gas, the pace of exploration is slower than in the past, but it appears that development, at least of the pre-FLPMA leases, will continue. Projected spacing will be one to two wells per square mile. If this development were to occur, wilderness values would be impaired. Based on these facts, it appears that the entire Adobe Town WSA cannot be effectively managed in the long term as wilderness.

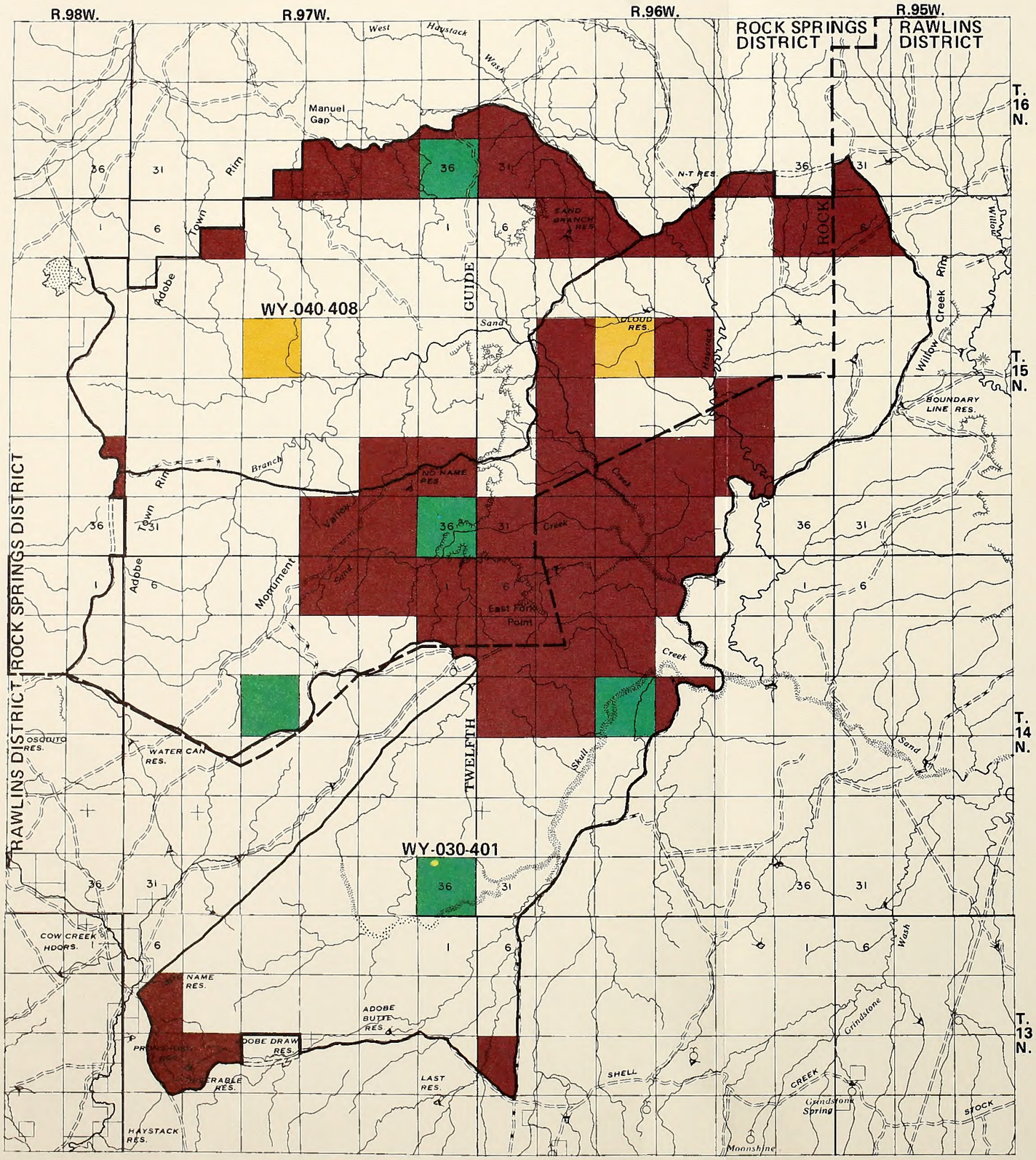
The mineral leasing situation for the entire area is shown on Map 3. There is one tract of land in the WSA that contains no pre-FLPMA oil and gas leases and also meets the criteria for wilderness (size, naturalness, and outstanding opportunities for solitude or primitive, unconfined recreation). The area shown on Map 2 contains 16,280 acres of public land, and because it contains only post-FLPMA oil and gas leases, this area could be effectively managed in the long term as wilderness.

Environmental Consequences

Proposed Action - No Wilderness, Intensive Resource Management and Alternative 1 - No Action, Existing Management, No Wilderness. Under these alternatives, the wilderness resource of Adobe Town would be irreversibly and irretrievably lost. The natural character of the WSA would gradually be replaced by roads, facilities, and sights and sounds of oil and gas exploration throughout the WSA. Opportunities for solitude and primitive, unconfined recreation would be gone. Special features such as wild horses and cultural and paleontological resources would be more accessible. Wild horses could be more easily viewed by the public because of more road building. Cultural and paleontological resources would be subject to additional unauthorized collecting and would be lost.

The primary difference between the two alternatives would be in the amount and degree of protection each provides for the area's noncommodity resources. The Proposed Action recommends an off-road vehicle (ORV) designation and measures to limit surface disturbance. Alternative 1 has no specific recommendations to limit disturbance of fragile resources, other than standard operating procedures. An ORV designation limiting travel to existing roads and vehicle routes would be partially effective in preventing damage to fragile areas, as would the prohibition on road and pipeline location through the badland rims.

Although the two alternatives are similar, the Proposed Action would be more effective in limiting surface disturbance to the area actually slated for development and would result in a better reclamation program.



Wilderness Study Area Boundary

Sections of Land containing only Post-FLPMA Oil and Gas Leases

Inholdings of State Lands containing Oil and Gas Leases

Split Estate Lands (Non-Federal minerals) containing Oil and Gas Leases

Note: Oil and Gas leasing records were examined for the Adobe Town WSAs. Leases were classified as pre-FLPMA or post-FLPMA depending on the data of issuance.

The areas shown in a brown color contain only post-FLPMA leases. For the balance of the WSAs each and every section of land was found to be made up a least in part by pre-FLPMA leases. If a section of land contained any pre-FLPMA leases it was considered "unmanageable" as wilderness and is shown under the pre-FLPMA lease category.

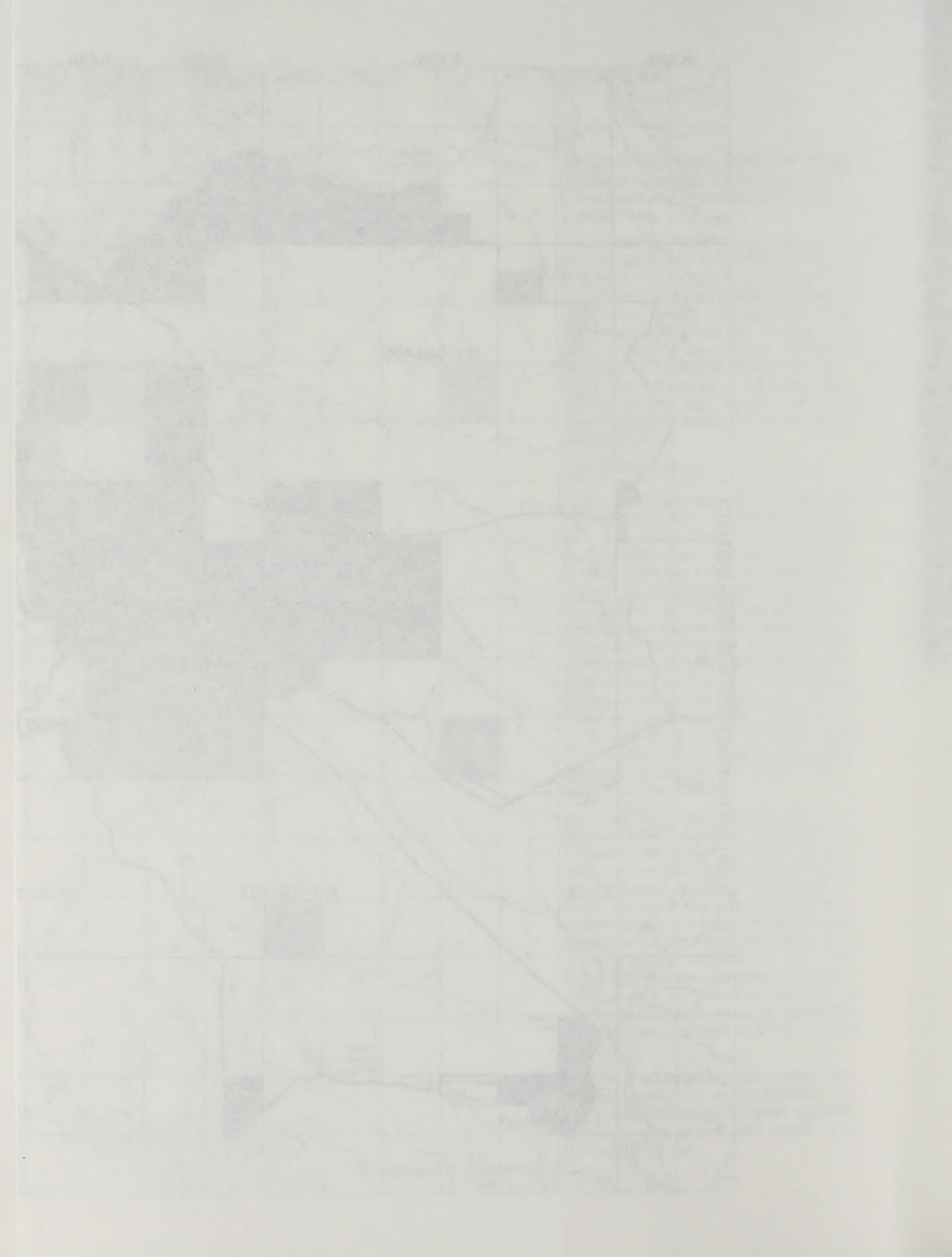
The yellow color shows State lands under oil and gas lease. The green color shows split estate lands (Federal surface-State minerals) under oil and gas lease.

The remainder of the area not shown in any color code is the pre-FLPMA lease area.

0 1 2 3 4 5 miles

1/2" = 1 mile

Map 3
Adobe Town WSA
OIL AND GAS LEASES



Alternative 2 - Partial Wilderness and Alternative 3 - All Wilderness. Under either of these alternatives, the wilderness values for the major part of the land in the WSA would be lost. The Partial Wilderness alternative would provide wilderness protection for 16,280 acres or 20 percent of the area, and the All Wilderness alternative would provide wilderness protection for about 26,000 acres, approximately 30 percent of the area. The All Wilderness alternative contains more acreage because of the addition of small tracts of land, less than 5,000 acres, with post-FLPMA leases. These areas are shown on Map 3.

The wilderness character of the portions containing pre-FLPMA oil and gas leases, or otherwise not recommended for wilderness designation, would gradually be replaced by roads, facilities, and sights and sounds of oil and gas exploration. In general, impacts to these portions of the WSA would be identical to those described under the Proposed Action and Alternative 1. The wilderness resource would be irreversibly and irretrievably lost.

The area covered in the Partial Wilderness alternative, on a smaller scale, is representative of Adobe Town in terms of its physical features. It contains rugged badlands that have a vertical relief of nearly 500 feet, Sand Creek and its tributaries, and areas of stabilized sand dunes and desert pavement. If it were designated as wilderness under the Partial Wilderness alternative, a number of beneficial impacts would result.

Wilderness values in the area would receive long-term protection. Short-term benefits would include preserving opportunities for primitive recreation and solitude, and protecting wildlife habitat, wild horses, soils and vegetation. Special features such as archeological and paleontological values would receive protection. Wilderness designation would eliminate conflicts between the wilderness resource and ORV use, roads and other facility construction, and potential mineral development. Long-term benefits would be an enduring wilderness resource that would add ecological diversity to the NWPS.

Recreational Resources

Affected Environment

The Adobe Town WSA has been used for many years for recreational purposes by area residents. Typical activities include hunting, sightseeing, ORV touring, camping, and rock collecting. Motorized recreation is the rule, although primitive recreation in the form of day hikes away from the road system is practiced to some extent.

Hunting for antelope, mule deer and predators such as coyotes and bobcats, along with sightseeing, are the major recreational activities. The Adobe Town area provides some of the highest quality antelope hunting in southern Wyoming, because of the remoteness of the area, a limited but adequate road system, few competing uses of the land, and a large herd of antelope. In 1981, the Adobe Town area provided about one fourth of the antelope hunting opportunities for hunt area No. 57 or about 250 hunter-days of recreational use (Wyoming Game and Fish Department 1982). Mule deer hunting accounts for a smaller amount of recreational use. Although other forms of recreation occur, no use data are available. Sightseers and persons engaged in rock collecting activities are commonly observed on weekends during the summer months.

Environmental Consequences

Proposed Action - No Wilderness, Intensive Resource Management and Alternative 1 - No Action, Existing Management, No Wilderness. Under both of these alternatives, the types of recreational use of the Adobe Town WSA would remain unchanged. Hunting and sightseeing would continue to be the major activities, with rock collecting also accounting for considerable visitor use. As new roads were built to facilitate oil and gas exploration, the area would be increasingly accessible on a year-round basis. Although volumes of recreational use would increase slightly because of increased accessibility, total visitor use would remain relatively unchanged. Antelope hunters, for example, are limited to the number of hunting licences issued by the Wyoming Game and Fish Department, and that number is not expected to increase. The most likely occurrence would be that numbers of antelope would decrease because of increased competition for use of Adobe Town among wildlife, livestock and activities of the oil and gas industry.

Under the Proposed Action, vehicular traffic would be limited to existing and new roads, vehicle routes and dry washes. This restriction would have no effect on recreation, except to help make it more compatible with other uses of the area.

As a result of increased competition from other uses of the land, the quality of activities such as antelope hunting might decrease in the future as oil and gas activity increased.

Alternative 2 - Partial Wilderness, and Alternative 3 - All Wilderness. The impact to recreational use of the Adobe Town area under either of these alternatives would be minor. Motorized recreation would be largely unaffected, since neither alternative would have the potential of managing more than about 30 percent of the area as wilderness. The areas manageable as wilderness areas are roadless. Motorized recreation would be enhanced in those portions of the WSA expected to undergo oil and gas development. The road system that would be built as a result of this development would ensure year-round access to the area.

Livestock Grazing

Affected Environment

There are four grazing allotments in the Adobe Town WSA. Three of these allotments are in the Rawlins District and one is in the Rock Springs District. The three Rawlins allotments are held by individuals and the Rock Springs allotment is held by the Rock Springs Grazing Association. Of the four allotments, only a portion of each lies within the WSA boundaries. All of the allotments traditionally have been used for winter grazing of sheep, but in recent years there have been some converisons to summer grazing of cattle. Although all of the area is used for livestock grazing, none of it is currently being utilized to capacity (see Table 2-3).

TABLE 2-3
LIVESTOCK GRAZING ALLOTMENTS IN THE ADOBE TOWN WSA

Allotment Number	Season of Use	Class of Livestock	Total Federal AUMs	Number Federal AUMs In WSA	Percent of Total
528	Winter	Sheep	5,362	680	13
502	Winter	Sheep	1,820	175	10
509	Summer	Cattle, sheep	2,420	1,000	40
Rock Springs Grazing Assn.	Winter	Sheep	105,000	3,213	3

Note: The Rock Springs Grazing Association allotment is a large incommon allotment shared by the Rock Springs Grazing Association and other users.

Access for grazing purposes is available on all of the roads and trails in the WSA. In recent years, additional roads have been built in the area to facilitate natural gas exploration and production. Maintenance of those roads and the continuing construction of new ones is improving access for livestock grazing (photograph 8). Some ranchers use dry washes, such as Sand Creek, for access in the winter to facilitate feeding and moving of livestock. There is some travel off of the roads, trails, or washes in the winter since heavily drifted snow occasionally blocks them. Access by motor vehicles to and within the area is essential in the winter to ensure safe management of livestock.

Range improvements (such as stock water reservoirs and several miles of fence separating the Rawlins and Rock Springs districts) exist in the area. About half of the reservoirs are no longer functional because they are washed out or filled with silt. The principal use of those remaining intact is for watering livestock, wildlife, and wild horses in the summer. None has been maintained since construction.

PHOTOGRAPH 8. Construction of access roads for oil and gas exploration is improving access for livestock grazing and other activities.

Environmental Consequences

Proposed Action - No Wilderness, Intensive Resource Management and Alternative 1 - No Action, Existing Management, No Wilderness. There would be no adverse impacts to livestock grazing under either of these alternatives. Continued oil and gas exploration and development would result in improved year-round motor vehicle access and would facilitate yearlong grazing of livestock. Maintenance of existing range improvements and construction of new ones would be unaffected by either alternative.

Alternative 2 - Partial Wilderness and Alternative 3 - A11 Wilderness. The Wilderness Management Policy, as it relates to livestock grazing and the mineral leasing situation of the Adobe Town area, must be considered in the analysis of these alternatives.

Under a wilderness designation, livestock grazing would be authorized according to the principles of good range management. A wilderness designation would not result in the removal of livestock from the area or a reduction in the number of livestock grazed on the area. Existing range improvements would be maintained and new ones would be constructed as long as they enhanced wilderness values. Properly designed improvements would not impair wilderness values and would benefit wildlife and wild horses, two special features of Adobe Town.

In general, motor vehicle access would only be allowed in emergencies and on special occasions, not for routine feeding, moving, or checking of livestock. In winter conditions this restriction would be hazardous and the risk of weather-related loss of livestock would increase.

Predator control activities would be adversely affected. Wilderness management would not eliminate predator control but would constrain some of the methods used. Aerial gunning, for example, would not be allowed, although hunting and traditional methods of trapping could be used.

The mineral leasing situation, pre-FLPMA leases, would make approximately 70 percent of Adobe Town available for mineral developemnt, regardless of the amount of the area designated as wilderness. The resultant system of roads would improve the area's accessibility for livestock grazing.

Adverse impacts resulting from a wilderness designation would be confined to a 16,280-acre

tract in the east-central part of the WSA. (This is the area proposed for wilderness designation under the Partial Wilderness alternative). Allotments 509 and 502 would be slightly affected if this area were designated as wilderness. Grazing would continue in allotment 528. There are no roads in this alltoment; access would be on horseback or by vehicle in dry washes.

The Rock Springs Grazing Association allotment would not be adversely affected. With existing roads remaining open and new roads constructed to facilitate natural gas development, access to the lands proposed for wilderness under either alternative would be improved. Map 4 illustrates the allotment boundaries with respect to the lands recommended for wilderness designation under the Partial Wilderness alternative.

If either of the alternatives were implemented, long-term productivity of the area for livestock grazing would not be adversely affected. Neither alternative would cause an irreversible or irretrievable commitment of resources.

Geology and Mineralization

Affected Environment

Geology. The Adobe Town WSA lies near the center of the Washakie Basin, a structural and topographic basin. The Washakie Basin is considered by some geologists to be a portion of the larger Green River Basin, which covers the southwest part of Wyoming.

The Adobe Town WSA is underlain by a sequence of sedimentary rock over 30,000 feet thick. The sediments range in age from the Cambrian Flathead Sandstone to the Tertiary Washakie Formation and Quaternary alluvium and colluvium. The sediments underlying the area are nearly horizontal, and there are no known large folding or faulting patterns.

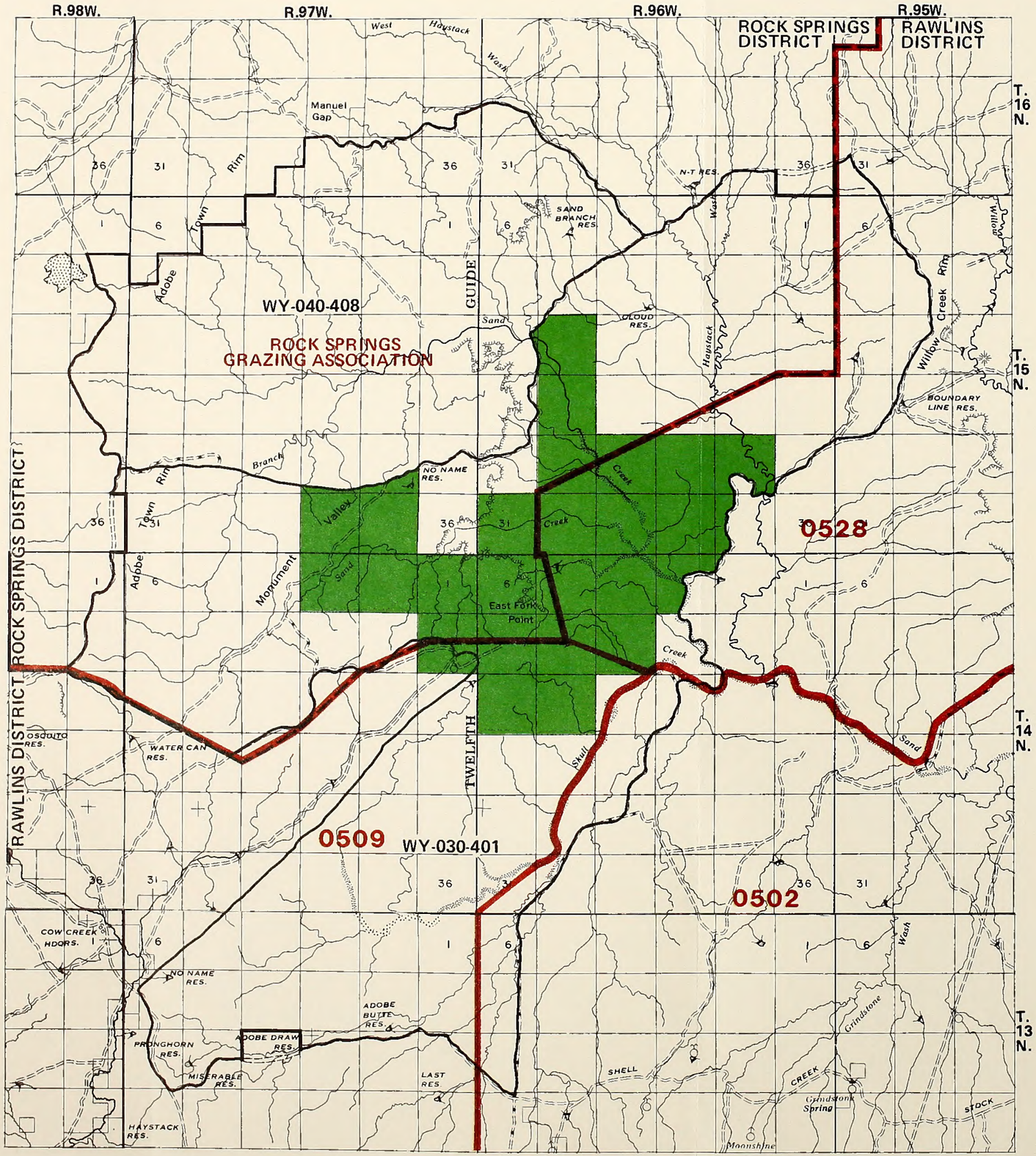
Mineralization. Both the U.S. Bureau of Mines and Rocky Mountain Energy Company have investigated an area west of Adobe Town WSA for oil shale potential. Large amounts of relatively low-grade oil shale, averaging approximately 15 gallons per ton, were found in the La Clede bed of the Laney Shale Member of the Green River Formation. In some areas minable thicknesses of rock, containing up to 25 gallons per ton, were found (Trudell 1973). These oil shale beds appear to be overlain by 3,000 feet or more of overburden in the Adobe Town WSA. This estimate is based on average dips of the rock formations and correlation of the dips with estimated thicknesses of overlying strata. The development potential of oil shale lying 3,000 feet below the surface is low.

A marker bed in the Adobe Town Member of the Washakie Formation in which clinoptilolite, a zeolite mineral, is abundant was identified by Roehler (1973). During the summer of 1980, BLM conducted a reconnaisance type inventory of this bed for the purpose of location, field description, and sampling. To the south of the Adobe Town WSA zeolite minerals are abundant, but the bed is contaminated in most areas with detrital material and authigenic clay. To the east and north of the Adobe Town WSA, the bed changes to a sandy tuff. The bed is projected to underlie the Adobe Town WSA, but it is at a depth where development potential is very low.

The Washakie Basin is presently being developed into a major gas producing province. Until 1976, most of the petroleum discovered in the Washakie Basin was in stratigraphic and structural-stratigraphic traps around the edges of the basin. The major oil reserves at that time were in the Patrick Draw area near the northwest edge of the basin. The major gas reserves were around the west, southwest, and south margins of the basin. Since 1976, there have been large increases in natural gas production in the basin. The north and east margins of the basin are being explored, and exploration is beginning in the basin's deeper portions.

The Upper Cretaceous Lewis Shale and Mesaverde Group have been the major gas producing areas in the shallower portions of the basin. The gas appears to have resulted from low grade, thermal metamorphism of coal beds. The amount of gas generated per unit of coal through this process is dependent on the maximum temperature to which the coal has been subjected, the effective heating time of the coal, the coal rank, and the percent of volatile matter.

Natural gas reserve estimates have been made by Barlow and Haun (1979) and McPeek (1981) for the Mesaverde Group and Lewis Shale. These estimates are based on parameters such as average productive zone thickness, average porosity, reservoir pressure, reservoir temperature, gas saturation, recovery factor, and success rates as they are presently known or projected from drill holes in the basin. McPeek estimated 20.4 trillion cubic feet (tcf) total gas reserves in the Washakie and Red Desert Basins, of which 10.8 tcf are between 12,500 and 18,500 feet in depth. Estimating an area the size of Adobe Town WSA at an average depth of 15,000 feet, and assuming the



Map 4
Adobe Town WSA
LIVESTOCK GRAZING ALLOTMENTS

same geologic conditions, results in an estimate of 1.0 to 1.1 tcf of natural gas reserves underlying Adobe Town WSA. Barlow and Haun originally estimated the natural gas reserves of Adobe Town WSA to be 2.646 tcf. The Adobe Town WSA has since been reduced in size, which would reduce this original estimate to 1.969 tcf gas. Most of the parameters used in developing these two estimates were close. The primary reason for the difference in the estimates is McPeek used a 60 percent ultimate exploration level whereas Barlow and Haun used 100 percent.

The deeper portions of Washakie Basin, including Adobe Town WSA, remain largely unexplored. The Mesaverde Group and Lewis Shale are over 15,000 feet in depth and are geopressured in this area. Formation treatment, such as hydraulic fracturing, in these deep areas has been technically impossible until very recently. In addition, there were no price incentives to produce gas from deep or tightformations before the Natural Gas Policy Act of 1978. Exploration and production in the deep basin was delayed until these events took place.

Gas discoveries have also been made in the Fort Union and Lance formations in the deep Washakie Basin. These formations have not produced gas in the margins of the basin, but they appear to contain large reserves in the deep basin.

Recent drilling in and near the Adobe Town area has been encouraging. Of the five wells drilled in the area, four have been producers and one apparent producer is being tested. Two of the producing wells are in the Mesaverde/Lewis Formation, and the apparent producer is also in this zone. The other two wells are in the Fort Union/Lance Formation.

Coal is projected to be present in the Wasatch, Fort Union, and Lance formations and in the Mesaverde Group underlying the Adobe Town WSA. However, the coal is so deep that development is unlikely.

Environmental Consequences

Proposed Action - No Wilderness, Intensive Resource Management, and Alternative 1 - No Action, Existing Management, No Wilderness. A major developable natural gas resource is projected to underlie the Adobe Town WSA. Other mineral commodities such as oil shale and zeolite minerals appear to be present in the WSA, but the geologic conditions of their occurrence make their development potential low and long term, at best.

Both of these alternatives would permit development of mineral resources. The No Action Alternative would allow development under the standard constraints applied in other parts of the resource area. However, the Proposed Action would put more emphasis on the protection of other resource values such as visual, cultural and paleontological resources, wildlife habitat, soils, and watershed. The special stipulations and conditions under which development could proceed would be primarily directed at locating roads and pipelines to minimize impacts. These special stipulations would increase cost but would not be expected to have a major impact on natural gas development.

The development and subsequent use of the natural gas resource would be an irretrievable commitment of the resource.

Alternative 2 - Partial Wilderness, and Alternative 3 - All Wilderness. The majority of the Adobe Town WSA (approximately 70 percent) is under existing oil and gas leases issued before the passage of FLPMA (Map 3).

These oil and gas leases constitute valid existing rights, and development of gas resources underlying them would be allowed whether or not the area is designated as wilderness. All of the oil and gas leases issued before the passage of FLPMA are within producing units. These leases will not expire until the unit agreement is terminated.

Under the All Wilderness Alternative, development would be allowed on all leases issued before the passage of FLPMA, but development would not be allowed on leases issued after the passage of FLPMA. If a unit agreement were terminated, then all leases subject to that agreement would expire 2 years after this termination date, or whenever oil and/or gas production ceased. These leases would not be renewed, and the gas resource would not be available for development. Other mineral development would be precluded. Study of the wilderness area for mineral deposits would not be allowed except for aerial surveys and nonimpariing ground surveys conducted according to an approved plan.

The Partial Wilderness alternative would remove approximately 20 percent of the WSA (see Map 2) from development opportunity. The remainder of the WSA would be available for exploration and development under conditions similar to those in the Proposed Action. The projections of natural gas reserves in the Adobe Town WSA assume that the gas is evenly distributed throughout the area. Since this alternative would recommend about 20 percent of the total WSA for wilderness, about 20 percent of the projected natural gas resource in the WSA or about 0.394 tcf would be removed from development.

Development and subsequent use of natural gas is an irretrievable commitment of the resource.

Wildlife

Affected Environment

Introduction. Many species of mammals, birds, reptiles, and amphibians are found in the Adobe Town WSA. A list of these species and the habitats used by them is available at the Rawlins District office. The major habitat types found in the WSA are badlands, Utah juniper, sagebrush-mixed grass, and big sagebrush.

Big Game Mammals. Pronghorn antelope and mule deer are the two big game species inhabiting the WSA. Wyoming Game and Fish Department population objectives and present population estimates for these two species are presented in Table 2-4.

Pronghorn Antelope. Antelope that inhabit the Adobe Town WSA are part of the South Wamsutter Herd Unit (Data Analysis Unit), which extends from Highway 789 west to the Bitter Creek Road. In 1980, the Wyoming Game and Fish Department estimated that this herd totalled 7,257 animals. The 1984 objective for this herd is 7,000 antelope. Approximately 445 antelope spend the summer within the WSA, and 1,200 inhabit the area during the winter. The eastern portion of the WSA is antelope crucial winter range, and the southern part is winter and yearlong range. The northwest portion is summer range (see Map 5).

The availability of free-standing water and vegetation in the preferred range type determines the overall antelope distribution pattern within the herd unit. As summer progresses, the antelope tend to concentrate in areas where water is readily available. In the fall, the animals start to migrate back to the winter ranges. As winter conditions become severe, the antelope concentrate on the crucial winter ranges where windblown slopes offer the only available forage.

Mule Deer. Mule deer that inhabit the WSA are part of the South Wamsutter Herd Unit (Data Analysis Unit), which extends from Highway 789 west to the Bitter Creek Road. The juniper ridges, sagebrush breaks, and eroded badlands provide high-quality, mule deer habitat.

During the last decade, this population has been steadily increasing. A 1980 postharvest population of 2,139 mule deer was predicted by the Wyoming Game and Fish Department. The

TABLE 2-4

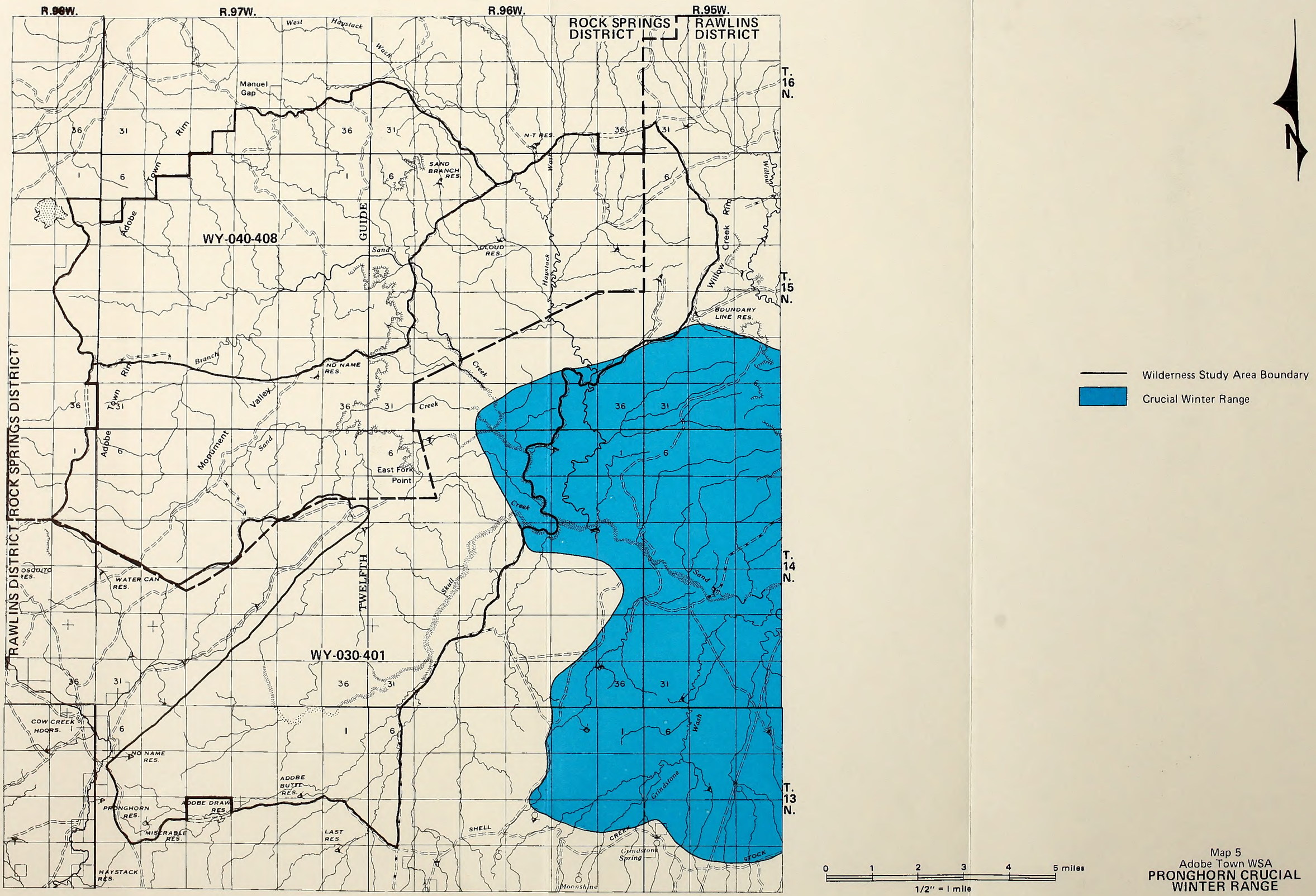
ADOBE TOWN WSA
BIG GAME POPULATIONS AND SEASONAL DISTRIBUTION

	Present Population[1] Within the Adobe Town WSA		Present Population Within the Total Herd Unit		Total Herd Unit Population Objective[3]
	Summer	Winter	Summer	Winter	
Pronghorn	445[2]	1,191	5,700[2]	7,257	7,000
Mule Deer	185[2]	225	2,390[2]	2,139	2,700

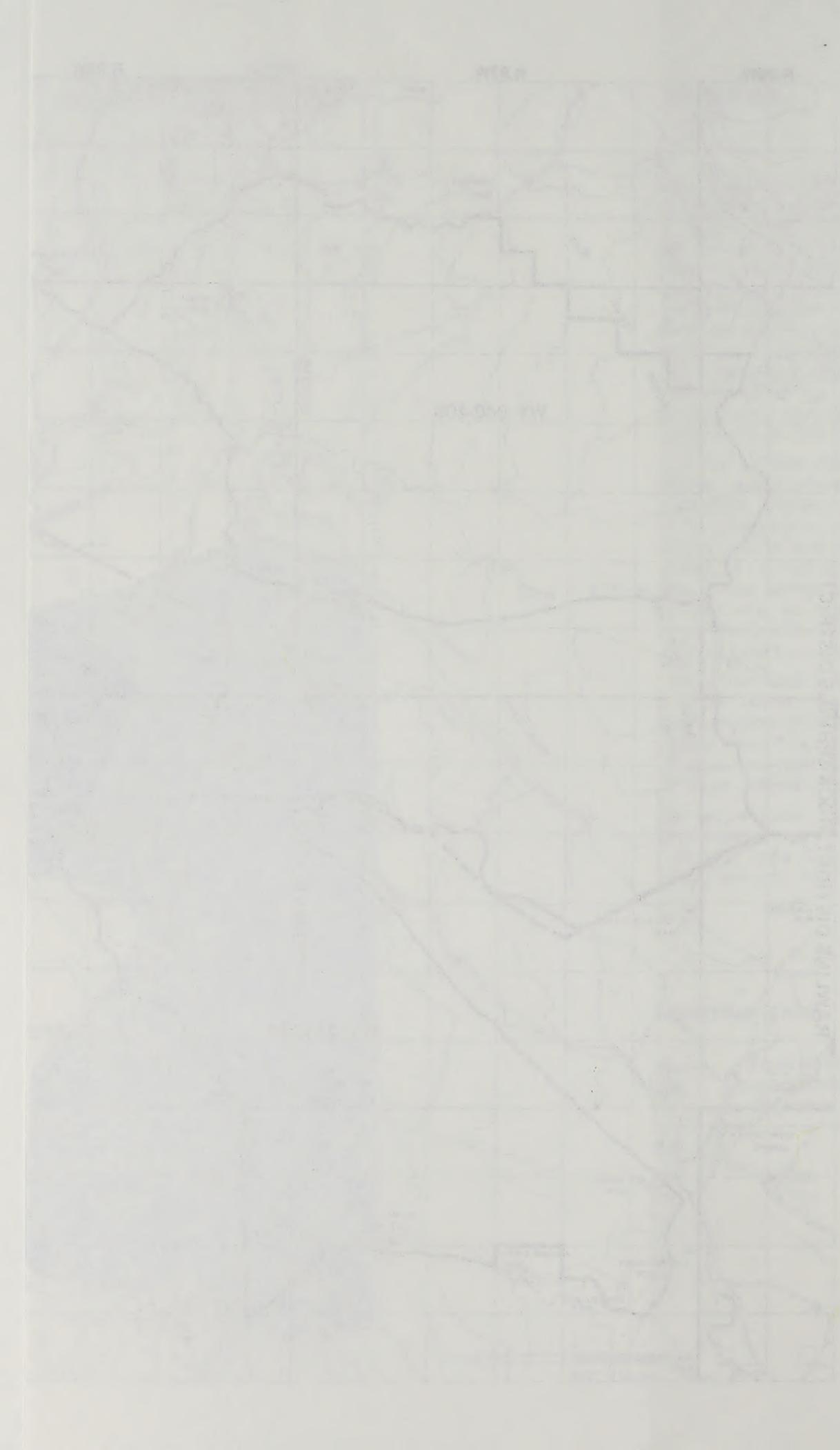
[1]Based on distribution by grazing allotment

[2]Adult animals

[3]Posthunt population objective



Map 5
Adobe Town WSA
PRONGHORN CRUCIAL WINTER RANGE



department's 1984 objectives for the herd is 2,700 deer. Approximately 185 mule deer currently inhabit the WSA during the summer, and 225 animals inhabit the WSA in the winter. The entire WSA is classified as mule deer winter and yearlong range.

Small Game Animals. The desert cottontail rabbit is found throughout the WSA. No data are available on population size or habitat condition.

Game Birds. Sage grouse and mourning doves are two species of upland game birds that inhabit the WSA. Accurate game bird population data are not available, because of the remoteness and inaccessibility of the WSA.

Sage Grouse. The northeastern portion of the WSA in the Haystack Wash area probably receives the most use by sage grouse. The sand dune/pothole habitat provides yearlong habitat for these birds. No strutting grounds have been documented within the WSA, mainly because of a lack of aerial surveys during the strutting season.

Mourning Doves. Mourning doves utilize the sagebrush-mixed grass habitat; they feed mainly on seeds. Before the first frost, doves congregate in large flocks and migrate for the winter.

Nongame Wildlife. Coyotes and jack rabbits are numerous. Excellent cliff nesting habitat for various raptors is also present. The northern plateau lizard, a species uncommon in Wyoming, has been reported in the WSA.

Raptors. The BLM Rawlins District has attempted to inventory raptors in the WSA. However, because of the rugged terrain and inaccessibility of the area, a complete raptor survey has not been accomplished. An abundance of prey (jack rabbits, cottontails, and other small mammals) and numerous cliffs makes the WSA quality raptor habitat. Seven ferruginous hawk nests, nine golden eagle nests, one prairie falcon nest, and one red-tailed hawk nest have been found in the area.

Threatened and Endangered Species. The U.S. Fish and Wildlife Service lists the bald eagle, peregrine falcon and black-footed ferret as possibly occurring within the WSA (Brewster, personal communication, September 1982).

No bald eagle nests, roosts, or wintering areas have been found in the WSA. Peregrine habitat in the WSA is limited, probably because of the lack of an abundant avian prey base and few water sources. Although prairie dogs are present in the WSA, no ferrets have been sighted. Section 7 of the Endangered Species Act consultations are in progress.

Environmental Consequences

Proposed Action - No Wilderness, Intensive Resource Management and Alternative 1 - No Action, Existing Management, No Wilderness. Under the Proposed Action, natural gas exploration and production would continue, but special emphasis would be placed on minimizing disturbance of wildlife habitat. Using existing roads where possible, establishing pipeline and road corridors, brush beating pipeline rights-of-way instead of blading, restricting ORVs, and conducting intensive reclamation are examples of management actions that will minimize habitat disturbances. Important raptor nesting sites will be protected and new road construction in the antelope crucial winter range will be minimized. Disturbance will be minimized in the high-priority habitat types, thereby maintaining the current vegetative mosaics as near as possible.

Wildlife impacts under the No Action alternative would be similar to the Proposed Action but slightly more adverse. Intensive wildlife habitat management is not emphasized under this alternative, although surface disturbance will be minimized. Existing management provides buffer zones for raptor nests and seasonal restrictions for oil and gas development on antelope crucial winter range, but it does not restrict ORV use, emphasize intensive reclamation, or provide a systematic approach to oil and gas field development to minimize vegetative disturbance.

Big Game. Under the Proposed Action, some big game habitat would be lost when new roads, pipelines, and drill pads were built. The loss would not be expected to significantly affect antelope and mule deer populations, particularly if brush beating instead of blading were used on pipelines crossing the crucial winter range. Increased access to the eastern part of the WSA would cause additional stress when antelope were on their crucial winter range. The severity of this additional stress to wintering antelope would depend on the amount of exploration and development that occurred on the crucial winter range and the severity of the winter. Off-road vehicle closures and seasonal restrictions on new drilling activity on the crucial winter range would help reduce habitat disturbance and stress on the antelope.

With less emphasis on habitat management under the No Action alternative, more big game habitat would be lost because of oil and gas development and ORV use. Intensive oil and gas

development could cause shifts in mule deer and antelope distributions, but population levels probably would not be significantly affected.

Small Game Mammals and Game Birds. Under the Proposed Action, intensive habitat management would reduce the likelihood of any small game mammal or game bird population declines as a result of oil and gas development.

Under the No Action alternative, oil and gas development would cause localized disturbances to small game mammal and game bird habitat. However, localized habitat disruptions would not be expected to cause significant population declines. If a sage grouse strutting ground were discovered in the WSA, standard operating procedures would be employed to protect the breeding and nesting area.

Nongame Wildlife. Intensive management of wildlife habitat under the Proposed Action would ensure a vegetative mosaic similar to what exists. This mosaic provides suitable habitat for many nongame species. Changes in vegetative composition under the No Action alternative would not significantly affect nongame population levels. Raptor nesting sites would be protected and their prey base would remain relatively stable under either action.

Threatened and Endangered Species. The Proposed Action or No Action alternative would not have any significant effects on bald eagles, peregrine falcons, or black-footed ferrets. A detailed analysis of potential effects on endangered species is presented in the biological assessment (U.S. Dept. of the Interior, BLM 1983).

The major difference between the Proposed Action and the No Action alternative is that the Proposed Action places more emphasis on habitat protection. Off-road vehicle restrictions, intensive reclamation, and a systematic approach to oil and gas field development under the Proposed Action would maintain the integrity of the wildlife community.

Alternative 2 - Partial Wilderness and Alternative 3 - All Wilderness. Under the Proposed Action and No Action alternatives, impacts to wildlife would be associated primarily with oil and gas development and ORV use. Under the All Wilderness alternative, impacts to wildlife from oil and gas development would still occur because of pre-FLPMA leases. However, 26,000 acres made up of several tracts of post-FLPMA oil and gas leases would remain free of natural gas development; some of the impacts identified under the No Action alternative would be slightly reduced. The Partial Wilderness alternative, which contains 16,280 acres with no pre-FLPMA oil and gas leases, would not be disturbed. However, under this alternative, oil and gas development on the remaining portion of the WSA would be allowed and would produce impacts to wildlife that would be similar to the Proposed Action. The Partial Wilderness alternative does not provide intensive habitat management for the antelope crucial winter range.

The ORV restriction for the All Wilderness alternative would be similar to the Proposed Action and would provide the same benefits to wildlife.

Adoption of the Partial Wilderness alternative could result in more habitat damage because it would include an ORV designation for the entire area.

The major difference between the All Wilderness alternative and the Partial Wilderness alternative is related to the amount of habitat that will be protected from disturbances associated with oil and gas development and ORV use. The All Wilderness alternative would provide an ORV restriction for the entire WSA, whereas the Partial Wilderness alternative would restrict ORV use on only 16,280 acres. The All Wilderness alternative would protect 26,000 acres from oil and gas development, and the Partial Wilderness alternative would protect only 16,280 acres.

Socioeconomics

Affected Environment

Economic and Social Conditions. This section describes the socioeconomic conditions that exist in the proximity of the WSA.

Population, Income, and Employment. The Adobe Town WSA lies in Sweetwater County, Wyoming, but affects the economic and social conditions of residents in both Sweetwater and Carbon counties. In 1980, the population of Sweetwater County was 41,723 persons, and the population of Carbon County was 21,896 persons (U.S. Department of Commerce March 1981). Both counties have grown significantly in population during the past 10 years, mainly as a result of increases in energy development.

Mining, which includes oil and gas, is the predominant industry in both counties, employing 29 percent of the labor force in Sweetwater County and 25 percent of the labor force in Carbon County. Mining also pays the highest wages in these counties (Wyoming Department of Administration and Fiscal Control May 1981).

Recreation. Although little documented information is available regarding visitor use in this area (Divide Basin Unit Resource Analysis), Rawlins District BLM recreation specialists know there is hiking and ORV use during the summer months. Hunting is the dominate recreational use in the area since antelope are found in abundance; mule deer are also hunted. In 1980, total hunter-day expenditures were estimated at $40,000 for antelope (300 hunter days) and $3,675 for mule deer (50 hunter days) (Wyoming Game and Fish Department 1982). Since population objective levels of big game are not expected to change, this economic resource is not expected to change.

Agriculture. Although the livestock grazing industry relies on allotments within the Adobe Town WSA, any impacts from actions proposed in this EIS would be negligible. Therefore, this segment of the regional economy will not be discussed further (see the Livestock Grazing section in this EIS).

Minerals. The Adobe Town area is underlain by large amounts of low-grade oil shale, zeolite, and potentially vast reserves of natural gas. (See Affected Environment, Mineralization.)With the exception of oil and gas exploration and development, however, there has been no development of the other minerals.

The Adobe Town WSA contains an estimated 1 to 2 trillion cubic feet of natural gas. At current prices, this gas would be worth approximately 5 to 10 billion dollars and would supply the residential customers of Denver, Colorado, with natural gas for approximately 20 to 40 years.

Little employment and income is being generated by mineral development in the WSA today. As the demand for natural gas increases, drilling activity will increase. This will cause employment and income in the mineral industry and related service industries of Carbon and Sweetwater counties to increase.

There is one well producing gas within the boundaries of the WSA. However, the majority of the WSA is under pre-FLPMA oil and gas leases, which will allow further energy development as the demand for the resource expands.

Lifestyles and Attitudes. Generally, the people of Sweetwater and Carbon counties pride themselves on their western way of life, which includes, among its several elements, small town living with its customs of friendliness, love of the outdoors, and adherence to traditional, conservative values.

Today, lifestyles in south-central Wyoming have been altered somewhat by the mixing of people from diverse economic and social backgrounds. In an area that has been historically agriculturally oriented, there now exists a strong influence toward an energy-oriented economy.

Public attitudes toward wilderness are varied. The following studies were used to aid in establishing how the public perceives wilderness in the state of Wyoming.

1. Wyoming Congressman Richard Cheney's 1979 and 1981 questionnaire sent to Wyoming's voting public.
2. Research Services, Inc. of Denver's poll for the Wyoming Heritage Society, November 1982 (Wyoming Heritage Society 1982).
3. A University of Wyoming survey (Warren and Warder 1978) of 175 Wyoming residents.
4. Opinion Research Corporation surveys conducted in 1978 of Montana, Idaho and Wyoming residents.
5. Public comments received during the scoping process.

(Those surveys by Research Services, Inc. and Opinion Research Corporation have been conducted scientifically and contain statistically valid results. The remaining studies provide insight into the nature of public opinion regarding wilderness, but they have not employed statistically valid survey methods.)

The surveys indicated a consensus among a majority of Wyoming residents that enough wilderness already exits. Most individuals did not believe wilderness would significantly affect economic growth. Members of the public also said that wildlife and other forms of nonconsumptive recreation is an important component of wilderness. Points brought out in public scoping meetings and these surveys both indicated a strong need for public involvement in the federal government's wilderness decisions.

Other issues covered in the surveys indicated a majority of Wyoming residents believed that energy development in Wyoming was very important (77 percent), with 92 percent believing that energy development and environmental protection could occur simultaneously. Also, 53 percent of the respondents disapproved of the law that allows drilling for oil and gas in wilderness areas until January 1984.

An analysis of public attitudes based on each of the above listed sources is contained in the Appendix.

Although written comments received during the wilderness inventory process were form various sources, a substantial number were from local residents and individuals or companies with an interest in the area. Of the comments regarding Adobe Town, concerns were split almost equally. Forty-nine percent were in favor of wilderness; 51 percent favored a multiple-use management practice. These comments are on file at the BLM Rawlins District office.

Environmental Consequences

Economic and Social Conditions. The information in this section describes the effects of the Proposed Action and each alternative on the socioeconomic environment.

Proposed Action - No Wilderness, Intensive Resource Management and Alternative 1 - No Action, Existing Management. Neither the Proposed Action nor Alternative 1 would significantly impact local, county, or regional population and demographic factors. Present growth patterns in population and employment would be expected to continue.

Implementation of either management action does not preclude mineral development, but the Proposed Action does place different compliance stipulations and conditions on developers. (Chapter II, Description of the Proposed Action.) These additional or modified stipulations would increase production costs on the extraction process, thus increasing the cost of gas to consumers and decreasing developers' competitiveness in the marketplace. For example, average costs per mile of a 4½-inch pipeline are $44,000, and for a crowned and ditched access road, $2,000. These costs would be added to normal development costs if additional lengths of roads and pipelines were needed to comply with these stipulations. This constitutes an unavoidable adverse impact to the resource.

Lifestyles and Attitudes. Neither the Proposed Action nor Alternative 1 would significantly alter regional public perceptions or attitudes. Implementation of either action would correlate with regional perceptions of wilderness and energy development. No additional wilderness would be added to the NWPS, but the environment would be protected, and energy and mineral development would be allowed.

Alternative 2 - Partial Wilderness and Alternative 3 - All Wilderness. As reported in the Environmental Consequences subdivision of the Geology section, an estimated 20 percent of the WSA would not be developed if the Partial Wilderness alternative were adopted. In the Affected Environment subdivision of the Mineralization section, natural gas reserves were estimated at approximately 1 to 2 trillion cubic feet. Development and production of this 20 percent would create an estimated 221 to 442 jobs in the regional economy and 34 to 68 million dollars in regional income. Although this employment estimate may appear high, it reflects the number of jobs associated with those unrecoverable reserves, most of which occur in the construction phase during drilling. Since drilling rigs in Wyoming move from site to site, the actual number of jobs at any given time would be less. Also, the uncertainty of the development of oil and gas reserves, because of economic reasons, precludes the fixing of job numbers and dollar figures.

This 20 percent of undeveloped reserves has a value to society, estimated at today's cost for natural gas, of 1 to 2 billion dollars. This volume of reserves would, at current consumption rates, supply the residential sector of Denver, Colorado, for approximately 4 to 8 years. The All Wilderness alternative would represent 30 percent of developable reserves in the WSA.

These undeveloped reserves constitute an unavoidable adverse impact. Short-term energy development is precluded under wilderness designation; however, long-term production of these resources may result, if at a future time there would be a congressional reversal of the wilderness designation.

The designation of this portion of the WSA as wilderness would preserve indefinitely a distinctive quality of the geography of the area. This would partially satisfy society's desire to preserve some historic and scenic America for future generations.

There would probably be little change in the current social structure of the region through designation of 20 percent of the WSA as wilderness. However, as indicated by the surveys, public sentiment statewide would be in disagreement with this action because a portion of the oil and gas reserves would be rendered undevelopable.

Since the alternatives account for 20 to 30 percent of the total WSA to be designated as wilderness, impacts from either alternative would

be similar. Although the All Wilderness alternative would protect more acreage, the area of pre-FLPMA leases would be developed regardless of the alternative selected (see Chapter 1, Standard Operating Procedures and Chapter 2, Oil and Gas Leases in the Wilderness and Recreation sections).

Conclusions. From a multiple-use standpoint, the Proposed Action presents the best solution to present day resource conflicts. Although energy development would conflict with scenic and recreational values, added stipulations would be imposed on development companies to reduce any degradation to environmental quality that would be considered valuable to society. There would be no significant losses to the regional economy under this management action.

From an economical viewpoint, the least optimal alternative is All Wilderness. The area does not lend itself to wilderness management without large administrative expenditures. It also precludes future mineral and energy development in that part of the tract having no pre-FLPMA leases.

Cultural Resources

Affected Environment

A literature review of the cultural resources in the Adobe Town WSA has revealed several field inventories within the study area. Field inventories have been conducted in the Salt Wells area, and four 40-acre blocks around well locations, access roads, and pipelines; they have covered approximately 2 percent of the study area. These field inventories indicate that the prehistoric cultural resource site density for the study area is approximately 30 sites per section, a high density of prehistoric human occupation. The prehistoric people who occupied the study area were hunters and gatherers whose movements were, to a large degree, determined by seasonal changes in resource availability. These people generally traveled in small bands, spending a limited amount of time in any one location. A particular culture resource site might represent a one-time use of a location or repeated use of the location for thousands of years. Diagnostic projectile points indicate nearly continuous use of the area for the last 12,000 years.

The people who utilized the study area historically were primarily involved in stock grazing and recreation. Stock grazing was the most common activity in the area during historical times.

Recreational use of the study area has increased in the second half of the 20th century as a result of population increases in the surrounding area and improved access and vehicles.

Although the density of cultural resource sites, both prehistoric and historic, is estimated at 30 sites per square mile, the information may not be statistically reliable since the sampling fraction is very small and the sample is not of scientific design. The majority of the field inventories were conducted for specific project-related activities and were not based on a consistent sampling strategy. No cultural resource sites recorded within the study area are currenttly listed on the National Register of Historic Places.

Environmental Consequences

Proposed Action - No Wilderness, Intensive Resource Management, and Alternative 1 - No Action, Existing Management, No Wilderness. The implementation of the Proposed Action would tend to minimize adverse effects for cultural resources since the existing information indicates a high density of cultural resources. Development of the existing and future oil and gas leases in the area in a systematic manner would reduce the number of cultural resource sites impacted by these activities.

The No Action alternative would result in no change for the management of cultural resources in the area. The cultural resources of the area are currently subject to adverse effects from ORV use and artifact collection activities.

The nonrenewable nature of cultural resources means that any consumptive use or destruction of cultural resource results in a loss over the long term. The availability of recovered scientific data concerning cultural resources might be increased over the long term by consumptive use such as scientific excavation, but would result in a reduced availability of the actual resource or potential data base.

Of the alternatives considered here, the Proposed Action would probably have the least long-term, adverse effect on cultural resources. Limiting ORV use would reduce current adverse impacts to the resources in the area.

The overall effect of implementation of the No Action alternative would be the least beneficial of the alternatives for cultural resources. This adverse effect would result from ORV use and artifact collection activities. This alternative would have the greatest adverse effect on cultural resources in the long term.

Alternative 2 - Partial Wilderness and Alternative 3 - All Wilderness. Implementing either of these alternatives would be beneficial to cultural resources. The withdrawal of the area from mineral entry, post-FLPMA oil and gas leasing, and ORV use would greatly improve the survivability of cultural resources. The existing environmental constraints would keep pedestrian use of the area to a minimum, and collection of individual artifacts would be reduced. The low priority of inventories for land that were not going to be developed would create the major adverse effect of some cultural resources being lost to natural causes such as erosion before being recorded. The existing pre-FLPMA gas leases probably would be developed and the cultural resources inventories conducted in conjunction with this development would provide a biased sample of the area's cultural resources. This sample would still be useful in interpreting the cultural history of the area. The only difference between these two alternatives is the amount of land involved. (Approximately 10,000 additional acres in the All Wilderness alternative.) Overall, the implementation of either alternative would be beneficial to cultural resources.

The nonrenewable nature of cultural resources means that any consumptive use or destruction of cultural resources results in a loss over the long term. The amount of recovered scientific data concerning cultural resources might be increased in the long term by consumptive use such as scientific excavation, but this also results in a reduced availability of the actural resource.

The nonrenewable nature of cultural resources means that any commitment of cultural resources is irreversible and irretrievable. This situation, created by the nonrenewable nature of cultural resources, would remain the same no matter which alternative is chosen.

Visual Resources

Affected Environment

The Adobe Town WSA forms an extraordinarily scenic, desert-badland area. Public lands in the Adobe Town WSA exhibit a fairly high degree of diversity. The landscape includes gently rolling hills, high bluffs, heavily eroded rimlands, intermittent drainages, and areas of stabilized sand dunes interspersed with desert pavement. Major vegetation types include sagebrush, greasewood/saltbush, and grass.

The character of the landscape is determined by the relationship among four basic elements: color, line, form, and texture. The dominant colors in the EIS area are the browns, reds, and greys of soils and rock, and the greens, yellows, and browns of vegetation. These colors vary with changes in season and weather. Lines are distinct in the stratification of soil and rock outcrops, changes in vegetation, and along various topographic features. Form (topography) varies from steep-walled and highly eroded rimlands, as evidenced by Skull Creek Rim and Adobe Town Rim, to the rolling, stabilized sand dunes east of the two rims. Texture results from different vegetation types, erosion patterns, and surface rock and soil features. These four, basic elements combine to give the EIS area the overall appearance of being open, rugged and natural.

Much of the area is free of cultural modifications. Examples of existing intrusions are oil and gas exploration sites and the accompanying roads. A number of earthen livestock reservoirs have been built in the area, but they are overgrown with native vegetation and blend in with their surroundings. The overall impact of these intrusions on the visual resources of the area is very low because of the large number of acres of undeveloped lands.

Environmental Consequences

Proposed Action - No Wilderness, Intensive Resource Management, and Alternative 1 - No Action, Existing Management, No Wilderness. Under these alternatives, visual resources would be adversely affected in the long term. The impacts would come from cultural modifications such as roads, drilling locations, and pipeline rights-of-way. Oil and gas development would eventually cover all of the area; there would be one or two wells per square mile.

Efforts to protect visual resources would meet with limited success. The expected network of roads and pipelines would exceed that which could be blended into the existing environment without impacts to the visual resource. Impacts would occur to line and color primarily; impacts to line because linear features would be superimposed on the landscape, and color because of the oil and gas development activities, which expose large amounts of light colored soil.

Manmade structures would be located throught the WSA. Impacts would be severe because oil and gas development would transform an area that is relatively free of manmade intrusions into one tht would have intrusions throughout. Impacts would not be irreversible, but they would be long term.

Alternative 2 - Partial Wilderness and Alternative 3 - All Wilderness. Impacts under these alternatives would be identical to those under the above alternatives for that part of the WSA not recommended for wilderness and/or the part containing pre-FLPMA oil and gas leases.

The parts of the WSA containing only post-FLPMA oil and gas leases would remain free of manmade intrusions.Because the area could be effectively managed as wilderness, visual resources would not be adversely affected. Effective wilderness management would prevent any adverse impact to visual resources.

Impacts in the nonwilderness parts of the two alternatives would be unavoidable and long term in nature. However, they would not cause irreversible or irretrievable impacts.

Wild Horses

Affected Environment

The Adobe Town WSA, except for a small portion of approximately 600 acres in the northwest corner, is included in the Adobe Town Wild Horse Management Area. There are an estimated 425 wild horses in the WSA, although this number varies from approximately 225 to 600 because of movement in and out of the study area. In the Divide Resource Area's Herd Management Plan, the proposed management level is 500 horses. There are no wild burros in this WSA.

The wild horses appear to be in good health. Injured or sick horses are rarely seen. The study area is relatively remote and unvisited, despite the recent upsurge in oil and gas activity. Consequently, the wild horses are quite shy and usually run at the sight of a vehicle or man.

There are no natural or manmade barriers preventing the wild horses from moving anywhere within the WSA or from moving in or out of the WSA. Water and snow accumulation are the two prevailing factors that cause the horses to move. During the spring and early summer, when water is relatively abundant, horses spread out over the area. As water becomes scarce during late summer and fall, the horses tend to concentrate around the few stock reservoirs and springs containing water. During winter, snow accumulation determines which areas wild horses use. As the snow accumulates, the horses begin to utilize the windblown ridges and southerly exposed slopes where snow does not accumulate as much. If the snow pack becomes widespread, the horses begin to move out of the WSA and either move north toward Delaney Rim or west toward Kinney Rim.

As the horse population increases above management objective levels and as funding becomes available, horses will be gathered to bring the population down to the management level. The preferred gathering method utilizes a helicopter to herd horses into a wild-horse trap. Wranglers then push the horses into corrals where they are loaded into trucks and hauled to a wild horse adoption center (photograph 9).

Environmental Consequences

Assumptions. For purposes of the analysis, the short term is defined as occurring from the time the final EIS is published until a decision is rendered on this analysis by Congress. The long term is open ended. The Adobe Town Herd Management Area Plan probably would be implemented with only minor revisions.

During the short term, the wild horse resource would be managed in accordance with the Interim Management Policy for Lands Under Wilderness Review, which has been discussed in the Standard Operating Procedures section. The analysis that follows deals only with the long term.

Proposed Action and Alternative - No Action, Existing Management, No Wilderness. The Proposed Action and Alternative 1 would not cause any significant impacts to the wild horses in the Adobe Town WSA. The wild horses in this area would be managed as described in the Adobe Town Herd Management Area Plan.

Alternative 2 - Partial Wilderness and Alternative 3 - All Wilderness. Under either of these alternatives, certain parcels of land under post-FLPMA leases would be maintained in their present state. Without development in these areas and with the restrictions applied by the wilderness management policy on the use of motorized and mechanical equipment within a designated wilderness area, the distribution of horses might change. The horses might use these parcels of

PHOTOGRAPH 9. Wild horse roundup.

land to avoid the areas of use and disturbance. Considering the small size of these sanctuaries, this impact would be expected to remain insignificant.

Horse gatherings would continue as needed. Horse traps would probably not be constructed in the tract of land recommended for partial wilderness. No additional horse traps would have to be constructed in the area recommended for the All Wilderness alternative. One old horse trap exists within these boundaries, but this trap is not considered necessary to remove horses from the area. During roundups, under either alternative, horse traps located outside the wilderness area boundaries would be utilized.

Paleontological Resources

Affected Environment

Middle to late Eocene layers of the Washakie Formation occur in the Adobe Town WSA. This formation consists of tuffaceous and arkosic sandstone; gray, green, or red mudstone; and minor thin beds of tuff, limestone, conglomerate, shale, and siltstone. The lower Kinney Rim and Upper Adobe Town members of the Washakie Formation were deposited by aggrading streams in a slowly subsiding basin. A tropical climate apparently prevailed during the depositional period of this formation and produced a wide variety of animals; crocodiles, alligators, fish, and turtles lived in the lakes and streams, and many rodents, primates, birds, and ungulates populated the terrestrial environment. As a result, vertebrate fossils are numerous in the Washakie Formation.

Two fossil locations within the Adobe Town WSA were briefly described by Roehler (1973). A location in T. 15 N., R. 98 W., Section 13, E½ includes rodent skeletons and a location in T. 15 N., R. 96 W., Section 20, NW¼NW¼SW¼ includes skull and jaw fragments of Titanothere, a primitive ungulate. Other fossil locations have been identified in Washakie Formation outcrops in the Washakie Basin.

Environmental Consequences

Proposed Action - No Wilderness, Intensive Resource Management, and Alternative 1 - No Action, No Wilderness. Destruction of paleontological resources resulting from

development of the natural gas resource is expected to be negligible. However, development of other mineral resources would cause more extensive damage to paleontological resources. More detailed geological knowledge of the Washakie Formation gained through mineral exploration and development would lead to a better understanding of the occurrence and paleoecology of these fossils. With more people present in the area, more unauthorized collecting activities would be expected, which could constitute an adverse effect. Under the Proposed Action, ORV closures would tend to limit this effect.

Alternative 2 - Partial Wilderness, and Alternative 3 - All Wilderness. Under both alternatives, oil and gas devleopment would be allowed on the area covered by pre-FLPMA leases. The area on which oil and gas and other mineral development would be allowed is about 65,600 acres. Under the All Wilderness alternative, about 55,900 acres would be available for development. Mineral Development, where allowed, would have the same impacts as discussed in Alternative 1. Paleontological resources in any areas designated as wilderness would receive enhanced protection from unauthorized collecting because of access limitations.

PART II - FERRIS MOUNTAINS WILDERNESS STUDY AREA

Location and Setting

The Ferris Mountains WSA, a small mountain range in northwestern Carbon County, lies within the physiographic province known as the Wyoming Basin in south-central Wyoming (Map 6).

Lander, Casper, and Rawlins, Wyoming, are the largest nearby communities, but the Ferris Mountains are within 5 hours driving time of SMSAs in the Rocky Mountain Region.

Development of Alternatives

To adequately analyze the Ferris Mountains WSA, four alternatives ranging from all wilderness to no wilderness were developed. There are two All Wilderness alternatives. The first, a required alternative, recommends all the public lands in the WSA for designation as wilderness. The second, referred to as the Enhanced Management alternative, recommends the inclusion of six additional tracts of land (1,800 acres), which are owned by the state of Wyoming and private individuals leaving near the WSA. Inclusion of the lands in the WSA would improve the boundary of the WSA and slightly improve manageability of adjacent WSA lands. The proposed land exchange was identified as a potential opportunity to consolidate holdings of private, state, and BLM lands to the mutual advantage of all the involved parties. If the exchange could not be accomplished to the satisfaction of everyone involved, it would not be pursued. This alternative was included in this EIS because of the geophysical relationship of the involved lands to the WSA.

The two remaining alternatives are both nonwilderness alternatives. One, the No Action, Present Management alternative, is the least restrictive in terms of resource development opportunities. No resource development options are ruled out, including harvesting of timber or development of mineral resources.

Because of the similarities between the Proposed Action and Alternative 3, they are grouped together for analysis. This combination streamlines the analysis and helps illustrate contrasts between the two alternatives. Table 2-5 presents an acreage comparison for the WSA by alternative.

TABLE 2-5
ACRES BY ALTERNATIVE FERRIS MOUNTAINS WSA

Alternative	WSA Acreage	Acreage Recommended for Acquisition	Total Acres Proposed
Proposed Action	20,495	0	20,495
No Action	20,495	0	20,495
Management of Primitive Values	20,495	0	20,495
Enhanced Wilderness	20,495	1,800	20,495

The final alternative, Management of Primitive Values, No Wilderness, was identified through the wilderness scoping process. Some individuals saw a need for an alternative that would emphasize management of primitive values without a wilderness designation because they believed a wilderness designation would be an inducement for people to visit the area in numbers sufficient to cause degradation.

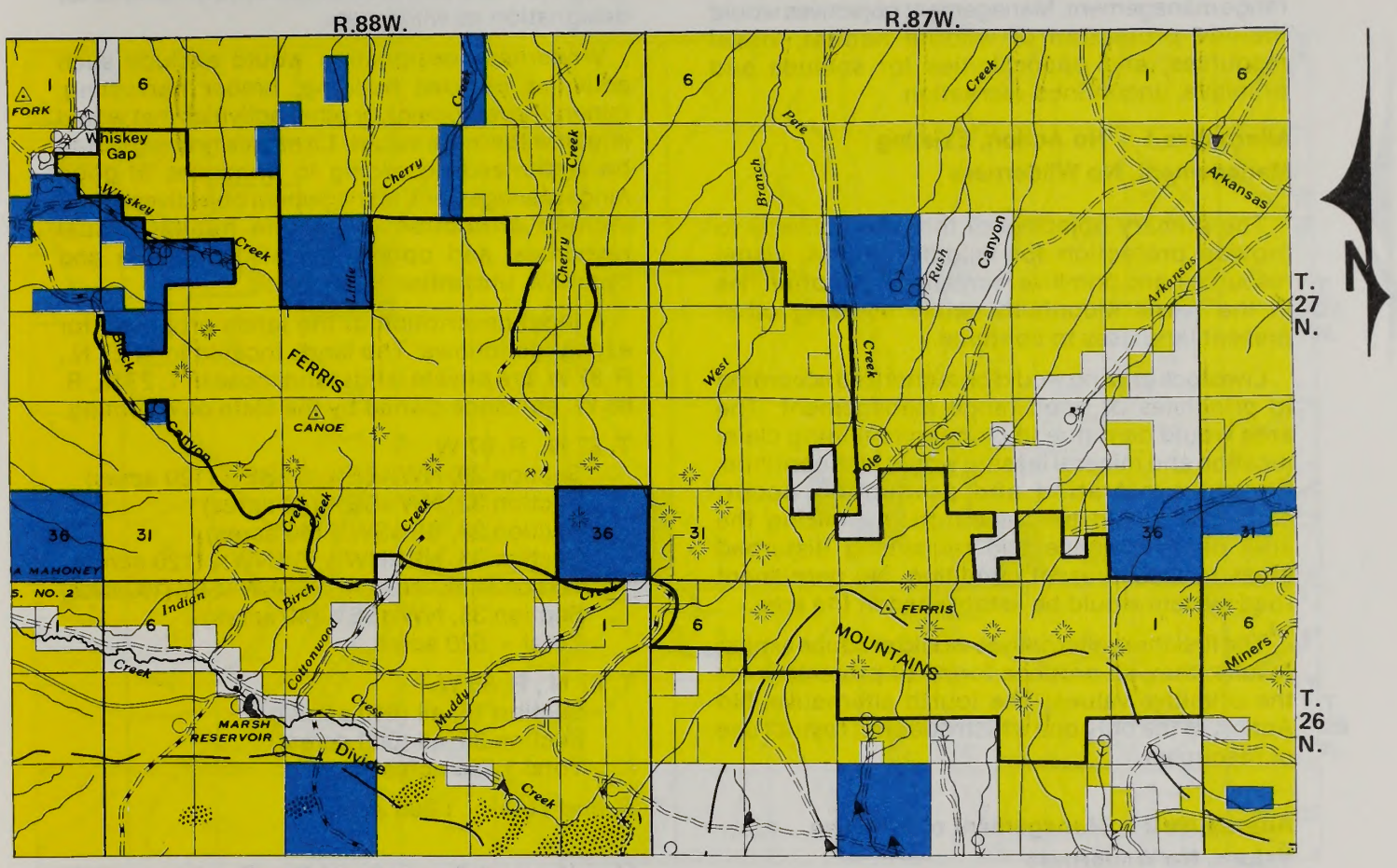
Alternatives Considered but Dropped

During the formulation of the alternatives for the Ferris Mountains WSA, an attempt was made to identify an alternative that recommended only a part of the WSA for wilderness designation. In all cases considered, reducing the acreage resulted in an arbitrary boundary, reduced manageability, and elimination of important wilderness attributes. Therefore, no partial wilderness alternative was included in the EIS. No other alternatives were considered.

Proposed Action and Alternatives

Proposed Action - Wilderness Management

Under this alternative, the entire WSA (20,495 acres of public land), is recommended for wilderness. Wilderness designation would exclude such activities as road building, timber harvesting,



Map 6
Ferris Mountains WSA
WILDERNESS STUDY AREA

mineral development, or other activities that would impair wilderness values. Livestock grazing would be authorized according to principles of good range management. Management objectives would include protection of wildlife habitat, visual resources, and opportunities for solitude and primitive, unconfined recreation.

Alternative 1 - No Action, Existing Management, No Wilderness

The primary objective of this alternative is to provide protection for wildlife habitat, visual resources, and primitive recreational opportunities in the Ferris Mountains, while allowing other present land uses to continue.

Livestock grazing would be authorized according to principles of good range management. The area would continue to be open to mining claim location and mineral leasing would also continue. Should exploration and production occur, emphasis would be placed on minimizing the area of disturbance and reclaiming disturbed areas to their present condition. No permanent road system would be established in the area.

The first three alternatives would produce similar results; they all propose forms of protection for the primitive values. The fourth alternative, No Action, is the only one which does not restrict use of resources.

Alternative 2 - Management of Primitive Values, No Wilderness

The objective of this alternative is to manage the entire Ferris Mountains WSA for primitive values. Wildlife habitat would be protected, along with visual resources and opportunities for primitive recreation and solitude.

Livestock grazing would be authorized according to principles of good range management. An ORV closure would be placed on the area, The area would be withdrawn from mineral location and administratively closed to mineral leasing, including oil and gas, once those existing leases expired. The purpose of the withdrawal would be for protection of wildlife habitat and other resource values.

Alternative 3 - Enhanced Wilderness Management through Acquistion of Additional Lands

Under this alternative, about 1,800 acres of private and state land adjacent to the WSA are proposed for acquisition through land exchange and will be incorporated into the area under study (Map 7). The entire area will be recommended for designation as wilderness.

Wilderness designation would exclude such activities as road building, timber harvesting, mineral development, or other activities that would impair wilderness values. Livestock grazing would be authorized according to principles of good range management. Management objectives would include protection of wildlife habitat, visual resources, and opportunities for solitude and primitive, unconfined recreation.

A legal description of the lands proposed for exchange follows. The lands located in T. 27 N., R. 87 W. are private lands, and those in T. 27 N., R. 88 W. are lands owned by the state of Wyoming.

T. 27 N., R. 87 W.
- Section 29, NW¼SE¼, S½SE¼ (120 acres)
- Section 32, NW¼SE¼ (40 acres)
- Section 28, SE¼SW¼ (40 acres)
- Section 33, NE¼NW¼, S½NW¼ (120 acres)
- Section 34, SE¼NE¼, N½SE¼SW¼SE¼ (160 acres)
- Section 35, NW¼SE¼ (40 acres)
- Total - 520 acres

T. 27 N., R. 88 W.
- Section 16, all (640 acres)
- Section 36, all (640 acres)
- Total 1,280 acres

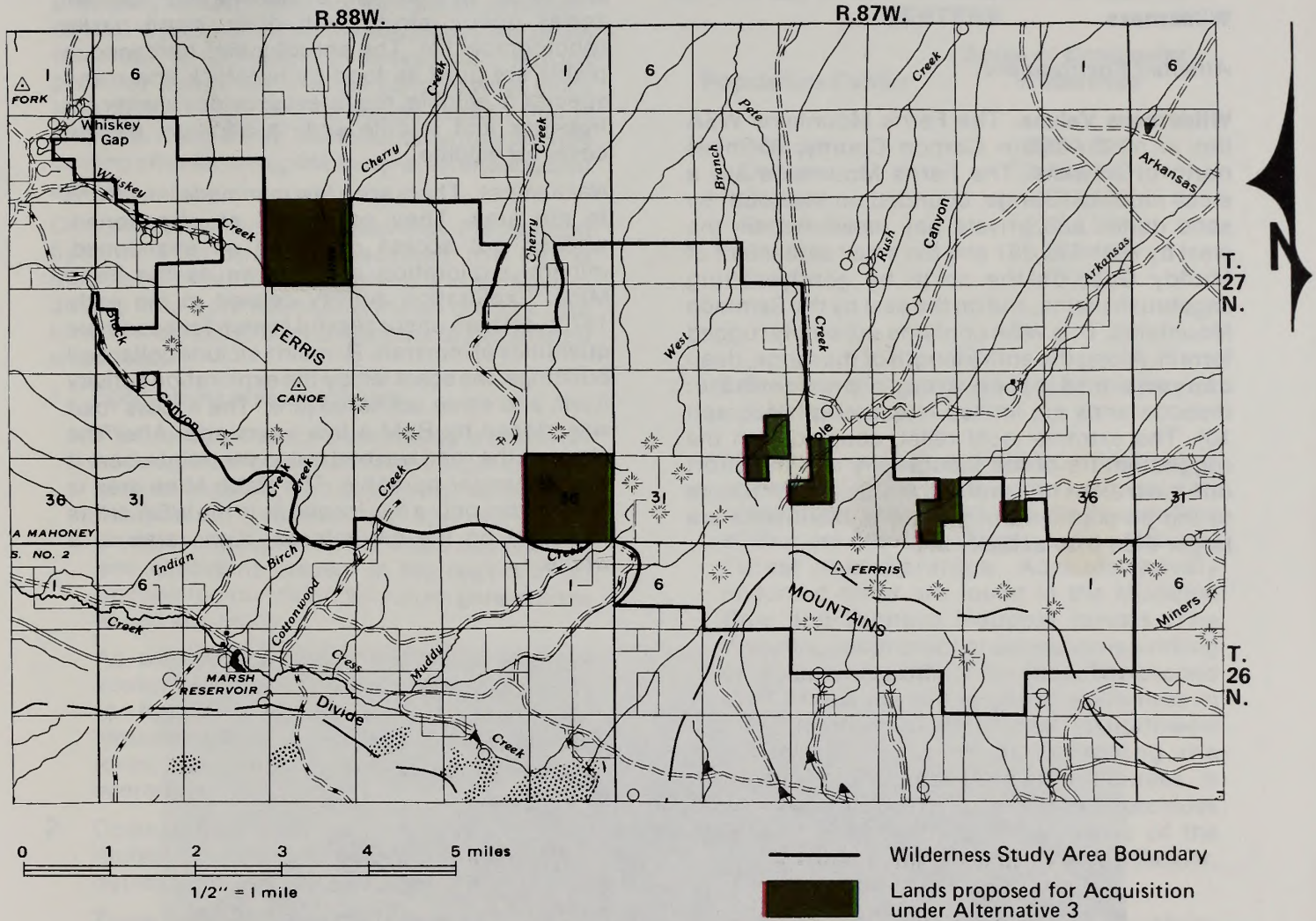
Grand Total - 1,800 acres

Unaffected Aspects of the Environment

The following items were analyzed to determine whether the Proposed Action or any of the alternatives would have an impact on them.

1. Areas of critical environmental concern
2. Air Quality
3. Climate
4. Wild or scenic rivers (designated or recommended)
5. Wild horses
6. Soils
7. Vegetation
8. Topography
9. Forests

The analysis revealed that none of these resources would be affected by the Proposed Action or alternatives, either positively or negatively, so they were not considered further.



Map 7
Ferris Mountains WSA
ENHANCED WILDERNESS MANAGEMENT ALTERNATIVE

Affected Environment and Environmental Consequences

Wilderness

Affected Environment

Wilderness Values. The Ferris Mountains WSA lies in northwestern Carbon County, 35 miles north of Rawlins. The Ferris Mountains are a small mountain range, bounded on the south by sand dunes and private hay meadows, on the west by Highway 287 and the small settlement of Muddy Gap, on the north by gently rolling sagebrush plains, and on the east by the Seminoe Mountains. This WSA contains extremely rugged terrain. Along the entire length of the range, deep canyons and steep slopes predominate; meadowlands are limited in extent (photograph 10). The extreme local relief, coupled with the rugged nature of the topography and the effort one must exert to travel in the area, all contribute to the perception that the Ferris Mountains are larger than they actually are.

From a distance, the Ferris Mountains appear to be dominated by forest vegetation, but there are unforested slopes covered by shrubs, grasses, and forbs. In addition, meadows and riparian zones occur, along with drier, open parks (photograph 11). The shrubby and herbaceous plants are used as food by livestock and many species of wildlife; the forest provides shelter for livestock and wildlife and, in addition, escape cover for wildlife.

Naturalness. There are a few manmade intrusions in the area. They consist of an abandoned, washed out access road and an abandoned, mineral exploration area known as the Babb Mine. Exploration activity ceased in the early 1970s, after an unsuccessful search for economic quantities of minerals. Remains include collapsed buildings, the scars left by the exploration activity itself, and some scattered junk. The access road was closed by BLM a few years ago. After the closure, the road washed out to the point where it was no longer passable. The Babb Mine area is visible from only a few locations in the WSA. It has no effect on the naturalness of the area as a whole.

PHOTOGRAPH 10. View of the Ferris Mountains from the west showing steep slopes and deep canyons.

Special Features. The Ferris Mountains WSA provides unusual and spectacular scenery. The mountains rise abruptly from Highway 287, providing beautiful scenery for travelers in south-central Wyoming. Along the southern flank of the mountain a formation of limestone outcrops provides a prominent white band several miles long. It is an outstanding scenic feature that is visible for many miles. The mountains may provide nesting sites for peregrine falcons, an endangered species.

Diversity in the National Wilderness Preservation System. This section describes the Ferris Mountains in terms of ecosystems and landforms, driving time from major population centers, and location relative to concentrations of designated wilderness.

1. Ecosystems and Landforms

   The classification of ecosystems is based on an integration of the natural factors of climate, vegetation, soils, and landforms. Wilderness designation presents an opportunity to preserve examples of the basic ecosystems and landforms present in the region in an unimpaired condition for future generations to use and enjoy.

   As with Adobe Town, the Bailey-Kuchler ecosystems classification system was used for the Ferris Mountains WSA. The Ferris Mountains WSA is classified as a Douglas fir forest ecosystem within the Wyoming Basin ecoregion.

2. Opportunities for solitude or primitive recreation within a day's driving time (5 hours) of major population centers.

   There are six SMSAs within 250 miles, a day's driving time, of the Ferris Mountains WSA. They are Boulder, Denver, Greeley, and Fort Collins, Colorado; Billings, Montana; and Casper, Wyoming.

   As shown in Table 2-6, there is a large amount of designated wilderness within a day's driving time of all of the major population centers.

   The Ferris Mountains WSA does not contribute appreciably to the availability of wilderness within a day's driving time of major population centers. However, one important feature of the Ferris Mountains is that they are accessible for a much longer part of the year than most of the other existing wilderness areas. They are free of snow earlier in the year and longer into the fall.

TABLE 2-6

ACREAGES OF DESIGNATED WILDERNESS WITHIN 250 MILES OF MAJOR POPULATION CENTERS

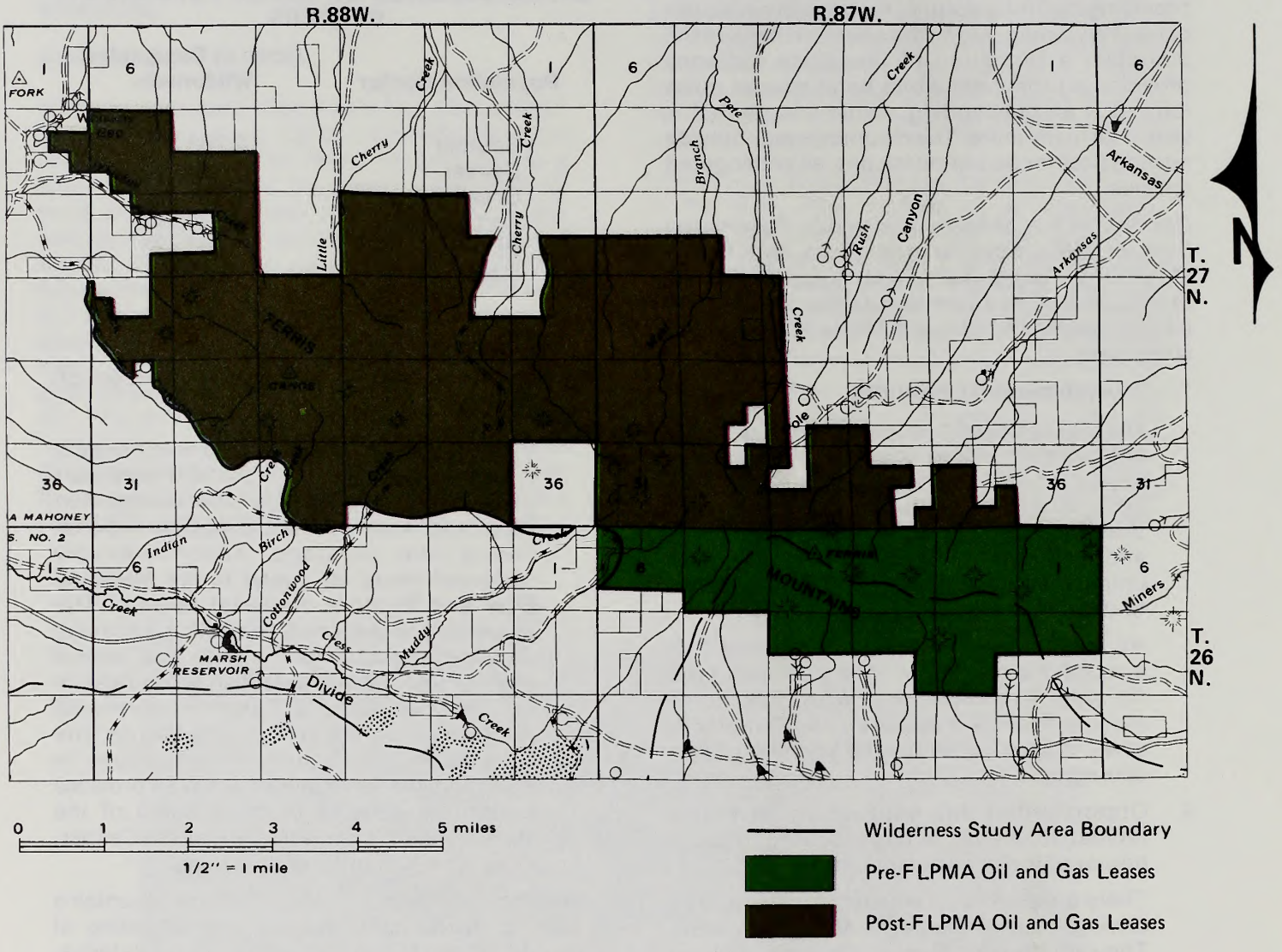
Population Center	Acres of Designated Wilderness
Boulder	2,793,229
Denver	2,793,299
Greeley	2,674,599
Fort Collins	2,734,599
Billings	3,507,430
Casper	4,022,461

3. Balancing the geographic distribution of wilderness areas.

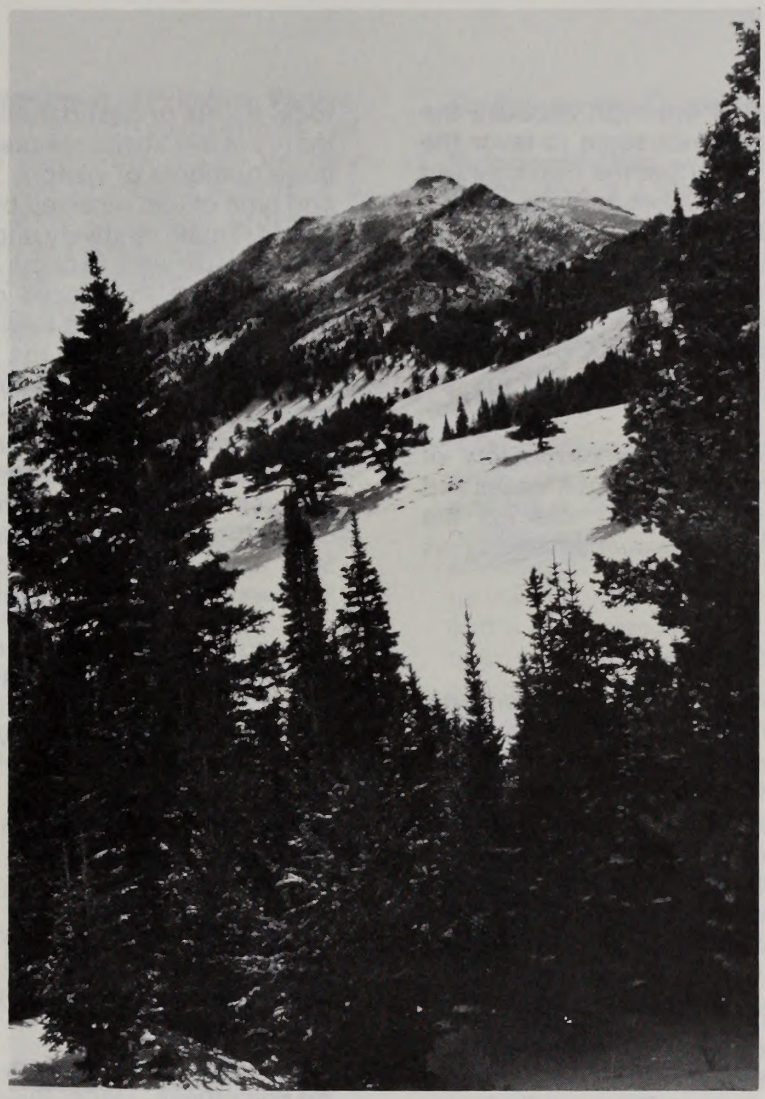
   Most of Wyoming's designated wilderness is on national forest lands in the northwest part of the state. The exception is the Savage Run Wilderness Area in the Medicine Bow National Forest near Saratoga. Administratively endorsed areas are found in the Medicine Bow and Bighorn National forests. The Wyoming congressional delegation is working on a wilderness bill for the state. The second draft of this bill will establish wilderness in the Bighorn National Forest in northwest Wyoming. In terms of improving the geographic distribution of wilderness in Wyoming, the Ferris Mountains WSA provides wilderness benefits close to some of the state's major population centers: Casper, Cheyenne, Laramie, and Rawlins.

Manageability. Although all of the Ferris Mountains WSA is public land, there is one inholding of private lands (160 acres) within its boundaries. The inholding is not part of the WSA. Other private and state lands jut into the WSA in a number of places. If development were to occur on any of the three tracts of land, the effect on the wilderness values of the surrounding lands and the WSA in general would be minor.

A portion of the Ferris Mountains WSA contains pre-FLPMA oil and gas leases (Map 8). These leases could be developed, even if development impaired the wilderness quality of the area. These leases include all of the WSA that is situated in T. 26 N., R. 87 W. (5,220 acres). The leases will expire in the fall of 1984. There have been no drilling operations in the area, but seismographic operations are currently underway. The likelihood



Map 8
Ferris Mountains WSA
OIL AND GAS LEASES



PHOTOGRAPH 11. A view showing spruce-filled drainages and unforested slope.

Size. The size of this area provides an opportunity to experience solitude and self-reliance. The Ferris Mountains WSA contains 20,495 acres, which are natural, essentially roadless and rugged. The size, as enhanced by the rugged nature of the terrain and by the fairly dense forest cover, helps qualify the Ferris Mountains as a quality wilderness area.

Outstanding Opportunities for Solitude and/or a Primitive Unconfined Type of Recreation. The Ferris Mountains WSA provides a number of classic-wilderness, land-based recreational opportunities. They include viewing scenery, hiking and walking, horseback riding, camping, hunting, studying nature, mountain climbing, and gaining general information about the area and its surroundings. All of those activities are of high quality, and one, hunting, is outstanding—elk, mule deer, and game birds are present. In the future, there may be opportunities to hunt bighorn sheep, depending on the success of the proposed transplant.

Hunting in the Ferris Mountains requires physical stamina and good hunting skills and provides considerable challenge. The rewards are a memorable hunting experience, excellent game meat, and frequently a nice trophy animal. These types of opportunities are becoming increasingly scarce in the Rocky Mountains today.

The route of the Continental Divide National Scenic Trail may pass through a portion of the Ferris Mountains WSA. This is a nationally important hiking trail, although this portion of the trail is not expected to receive much use.

that drilling will occur is not high because the geological formations do not seem to favor the occurrence of oil and gas. (See the Geology and Mineralization section for more information.) If the leases were reissued, they would contain the BLM wilderness stipulation (available for review at any BLM office) and would be subject to the nonimpairment standard for WSAs. The remainder of the WSA contains post-FLPMA oil and gas leases, which do not convey a valid existing right to their owner.

Because of the apparent low probability of mineral exploration on the pre-FLPMA leases and the limited extent of the private inholdings, the area meets the criterion for manageability as wilderness.

Environmental Consequences

Proposed Action - Wilderness Management and Alternative 3 - Enhanced Wilderness through Acquisition of Additional Lands. Designation of the Ferris Mountains WSA as wilderness under either of the above alternatives would benefit wilderness values. Short-term benefits would include preserving opportunities for primitive recreation and solitude; protecting wildlife habitat, soils and vegetation; and protecting and enhancing watershed.

Wilderness designation would also contribute to expanding the diversity of the NWPS. The Ferris Mountains lie within the Wyoming Basin and are representative of a Douglas fir forest ecosystem (A3140-11). No Douglas fir forest ecosystem in the Wyoming Basin is represented in the NWPS.

Wilderness designation would preserve special features of the Ferris Mountains such as cultural resources, visual resources, and habitat for endangered species believed to inhabit the area. This designation would eliminate potential conflicts between the wilderness resources and other uses such as ORVs, roads and other facility construction, and timber harvesting. In the long term, mining and oil and gas exploration would also be eliminated. Designation would provide permanent protection for the wilderness resources of the Ferris Mountains.

If the Ferris Mountains were designated as wilderness, some people believed that visitor use would soar, causing degradation of the area. Even though the Ferris Mountains WSA has small perennial streams, the fishing opportunities are minimal. There are no or existing trail systems or focal points or destinations such as lakes. Thus, there are few attributes present that would attract large numbers of visitors. Therefore, the volume and type of use received by the Ferris Mountains would remain relatively unchanged. If an increase in visitor use were to occur, it would most likely be an increase in people coming from nearby communities such as Rawlins in response to the publicity caused by the designation process. Problems of litter or vandalism probably would not be worse than at present. For example, in spite of very heavy use and international reputation, the problems of litter and vandalism in Wyoming's Bridger Wilderness area are minor. Any problems involving litter and vandalism in the Ferris Mountains would occur regardless of whether the area was designated as wilderness.

Acquisition of state and private lands would enhance the manageability of small parts of the WSA. These parcels of private lands would then be unavailable for subdivision development or other nonwilderness use. The subject lands would be acquired by exchange. The exchange would not occur if it would not prove to be beneficial to the United States, the state of Wyoming, or the owner of the private lands.

The basic difference between the two alternatives would be that Alternative 3 would result in slightly better manageability of the Ferris Mountains as wilderness.

Alternative 1 - No Action, Existing Management, No Wilderness. Under this alternative, there would be a risk of degrading the wilderness values of the Ferris Mountains, because wilderness would not be a management objective. Although the probability is low, timber harvest/management activities and/or mineral exploration could occur. Such activities would radically change the Ferris Mountains from an area where primitive activities dominate the landscape to one where motor vehicle access and attendant human activity would be common. This would result in an irrevocable loss of the wilderness resource. If actions such as harvesting of timber, construction of roads, or exploration for oil and gas or other minerals were allowed in the area, it would be difficult or impossible to remove the evidence in the forseeable future. Wilderness values would be adversely affected in the long term by such activities. These activities could irreversibly and irretrievably impair the area's wilderness values.

No contribution to the expanded diversity of the NWPS would be made under this alternative.

Alternative 2 - Management of Primitive Values, No Wilderness. The consequences of implementating this alternative would be very similar to those for the Proposed Action. If a mineral withdrawal were obtained, protection very similar to wilderness designation could be extended to the WSA. However, the Ferris Mountains would not be managed as wilderness or made a part of the NWPS. A mineral withdrawal for an area the size of the Ferris Mountains WSA would require congressional approval.

The WSA could be successfully managed for primitive values. The opportunities for solitude and primitive, unconfined recreation would be protected as well as special physical and biological features.

Recreational Resources

Affected Environment

All of the recreational activities that occur in the Ferris Mountains WSA are primitive in nature and are described fully in the Wilderness section. Before 1978, road access was available into Young's Pass, which is located in the center of the WSA. The road was used primarily by hunters during the fall of the year. It was closed to curtail resource damage because of excessive erosion. Since the closure, a major storm caused flooding that virtually destroyed the remaining road, making it impassable.

Camping, fishing, hunting, hiking, and related activities all occur around the periphery of the WSA. Most of these activiites occur in the fall during the hunting season, but campers and hikers use the area throughout the snow-free months of the year. Major use areas are Sand Creek, Cherry Creek, Pete Creek, and Whiskey Creek. However, the major attraction is the mountain itself, which provides the wildlife habitat for hunting opportunities, the watershed for the fishery, and the attractive scenery (photograph 12).

A major limiting factor for nonprimitive forms of recreation is topography. The extremely rough topography limits road building and makes recreation-site construction extemely difficult.

Big game hunting accounted for an estimated 1,150 visitor days recreational use for the year 1981, the most recent year for which data are available (Wyoming Game and Fish Department 1982). No visitor use data are available for other types of hunting or other forms of recreation.

Environmental Consequences

Proposed Action - Wilderness Management, and Alternative 3 - Enhanced Wilderness through Acquisition of Additional Lands. Designation of the Ferris Mountains as wilderness under either of the above alternatives would cause no adverse effects to recreational resources. Neither of the alternatives would reduce access to the mountain through road closures nor would any campsites on public lands be closed.

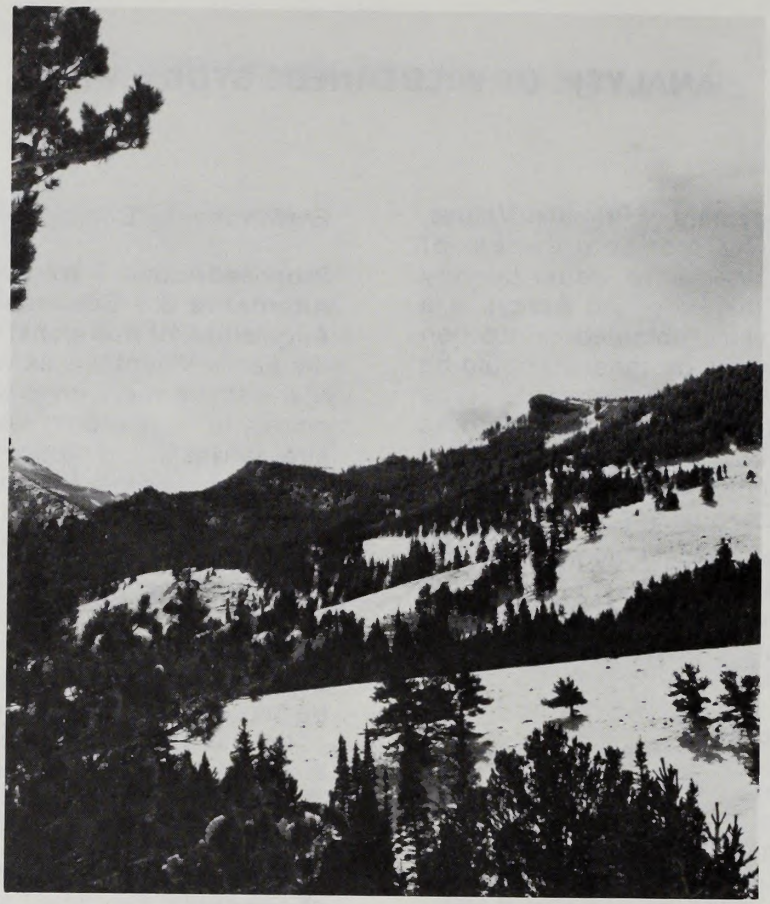
Wilderness designation would ensure that the area remained unchanged from its present condition. Road building would not occur. The present patterns of recreational use would not be affected. The greatest benefit to recreation would be that it would remain as one of the primary uses of the mountain rather than risk being displaced by possible uses such as timber harvest or mineral exploration (livestock grazing and watershed are other important uses).

Acquisition through land exchange of the tracts of nonpublic land identified under Alternative 3 would be beneficial to recreation. Acquisition would ensure that public access to the mountains would not be blocked. It would also ensure that the lands would not be available for uses such as mountain subdivisions. Such uses would benefit the individual private landowners but would adversely affect public recreation.

The volume of recreational use in the area would not increase appreciably if either of the above alternatives were chosen.

Alternative 1 - No Action, Existing Management, No Wilderness. No changes from existing management would occur under this alternative. Recreational uses and volumes of use would not change unless some new resource uses under the multiple-use concept (e.g., oil and gas exploration) were to displace current types of recreation. The chances of that happening do not appear to be great at this time.

Alternative 2 - Management of Primitive Values, No Wilderness. Impacts to recreational resources under this alternative would be much the same as under the two wilderness management alternatives. This alternative would not have nearly the permanence that wilderness would have, but a mineral withdrawal would remove the major risk to degradation, that of mineral exploration.



PHOTOGRAPH 12. Ferris Mountains provide a scenic environment for recreation activities. The rough topography limits the construction of roads and recreation facilities.

Livestock Grazing

Affected Environment

Six operators graze livestock within the boundaries of the Ferris Mountains WSA. The majority of the area is used for grazing cattle, although sheep occasionally use the lower slopes on the southeast end of the mountain. In spite of the steepness and ruggedness of the mountains, livestock graze most of the WSA. During the summer months, for example, cattle may be observed on the summit ridge. Livestock grazing occurs during the months when the area is free of snow, usually from May through October.

Range improvements are limited to fences along the lower slopes of the WSA. Short vehicle trails extend into the WSA at several points. These are used occasionally by operators to move livestock, to maintain fences, and to perform such tasks as salt distribution. Herding of livestock within the core of the Ferris Mountains has always been done on foot or horseback.

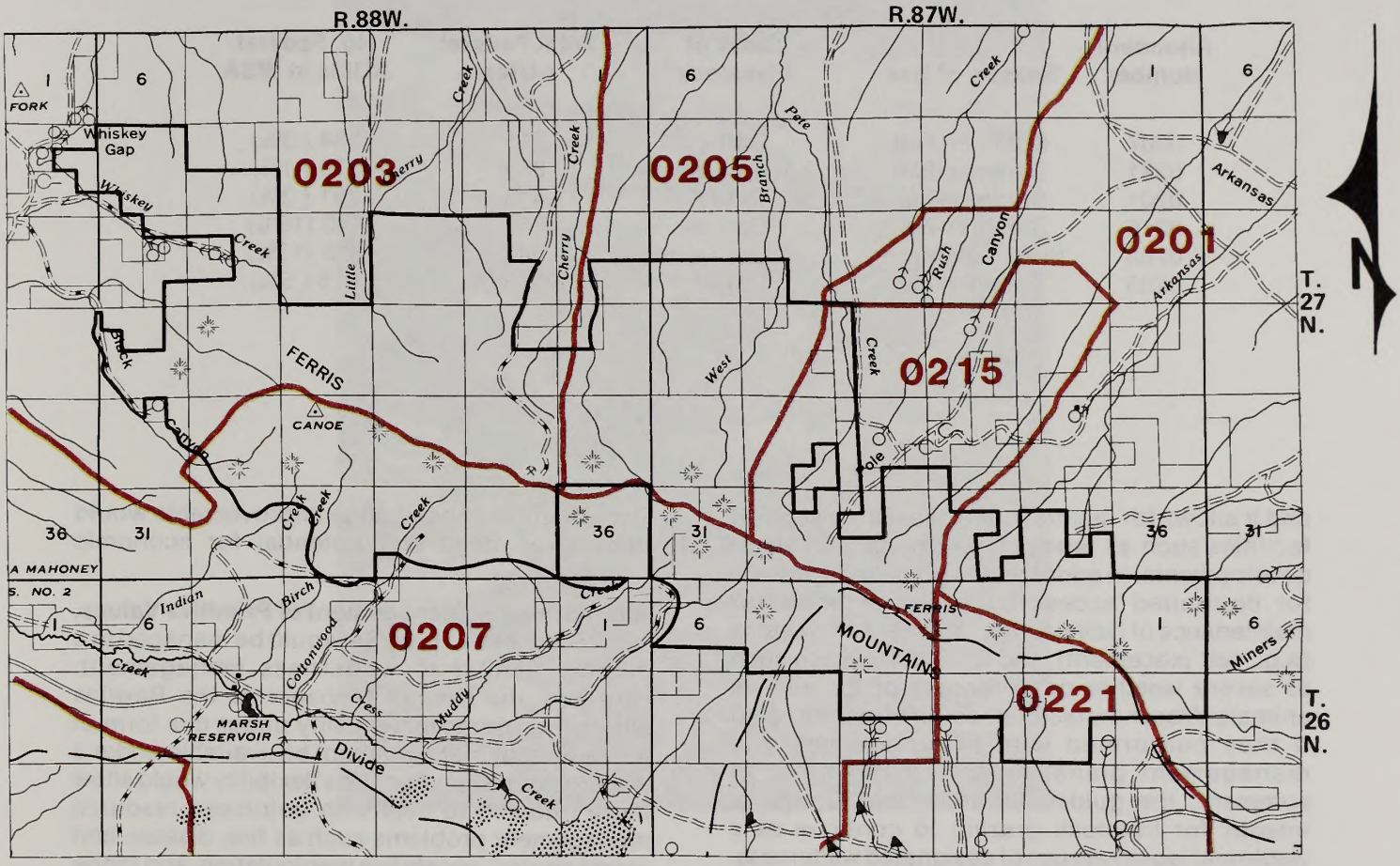
There are six grazing allotments in the area that are made up in part by lands in the Ferris Mountains WSA. In general, only a small portion of each allotment is contained within the boundaries of the WSA, both in terms of acreage and in terms of livestock forage. The mountains make an important contribution to the operators who use them. The forage is important, but perhaps their greatest value is watershed. Water from the Ferris Mountains is distributed to the surrounding lands for livestock consumption and irrigation of hay meadows (photograph 13).

Table 2-7 lists and describes the grazing allotments, including a breakdown of federal animal unit months in the WSA and in the allotments as a whole.

Map 9 shows the allotments in the WSA. Note that only two, numbers 0203 and 0205, have appreciable acreage within the WSA boundaries.

Environmental Consequences

Proposed Action - Wilderness Management and Alternative 3 - Enhanced Wilderness through Acquisition of Additional Lands. Wilderness designation of the Ferris Mountains WSA would have little adverse effect on livestock operations in the area. Livestock grazing would continue to be authorized according to principles of good range management. The BLM Wilderness Management Policy provides for continued livestock grazing in wilderness areas if the area has been used for that purpose before designation,



Map 9
Ferris Mountains WSA
LIVESTOCK GRAZING ALLOTMENTS

TABLE 2-7
LIVESTOCK GRAZING ALLOTMENTS IN THE FERRIS MOUNTAINS WSA

Allotment Number	Season of Use	Class of Livestock	Total Federal AUMs	No. Federal AUMs in WSA
0207	Summer-Fall	Cattle	4,711	134 (3%)
0221	Summer-Fall	Sheep, Cattle	12,889	170 (1%)
0201	Summer-Fall	Cattle	11,413	291 (3%)
0215	Summer-Fall	Cattle	750	140 (19%)
0203	Spring-Summer	Cattle	4,842	613 (13%)
0205	Summer-Fall	Cattle	18,623	915 (5%)

and it allows for maintenance of existing support facilities such as fences, line cabins, and water developments. In addition, the guidelines provide for continued access by motor vehicles for maintenance of facilities, management of livestock (e.g., salt placement), and for emergencies such as severe weather or to recover or locate sick animals. Also, new facilities could be constructed if they conformed with the guidelines and management plans governing the area. In summary, the guidelines show that Congress intends for livestock grazing to continue as a viable and legitimate use of designated wilderness.

Wilderness designation would probably not cause a significant increase in visitor use for recreational purposes to the area. Therefore, it is unlikely that there would be additional problems for livestock operators. Most recreational visitor use would continue to be hunting and related activities. If conflicts between recreational use of the Ferris Mountains and other uses such as livestock grazing were to increase in frequency, those increases would occur with or without wilderness designation. Wilderness users generally do not vandalize or litter. (See analyses in the Wilderness and Recreational Resources sections.) If the area were designated as wilderness, a Wilderness Management Plan would be written; this plan would cover visitor management.

Alternative 1 - No Action, Existing Management, No Wilderness. There would be no impact to livestock grazing under this alternative. Livestock operations would be authorized according to princples of good range management. Construction of new range improvements would depend on need and potential for economic return.

Alternative 2 - Management of Primitive Values, No Wilderness. .The WSA would be managed in a manner similar to wilderness management. However, the District Manager of the Rawlins District would have flexibility under this form of management that would not be available under a wilderness designation. This flexibility would allow more freedom to deal with unforseen resource management problems such as fire, disease and insect control, vegetative manipulation, and range improvements. But, it would also involve the risk of losing wilderness values. Otherwise, the impacts under this alternative are identical to those described for the Proposed Action.

Geology and Mineralization

Affected Environment

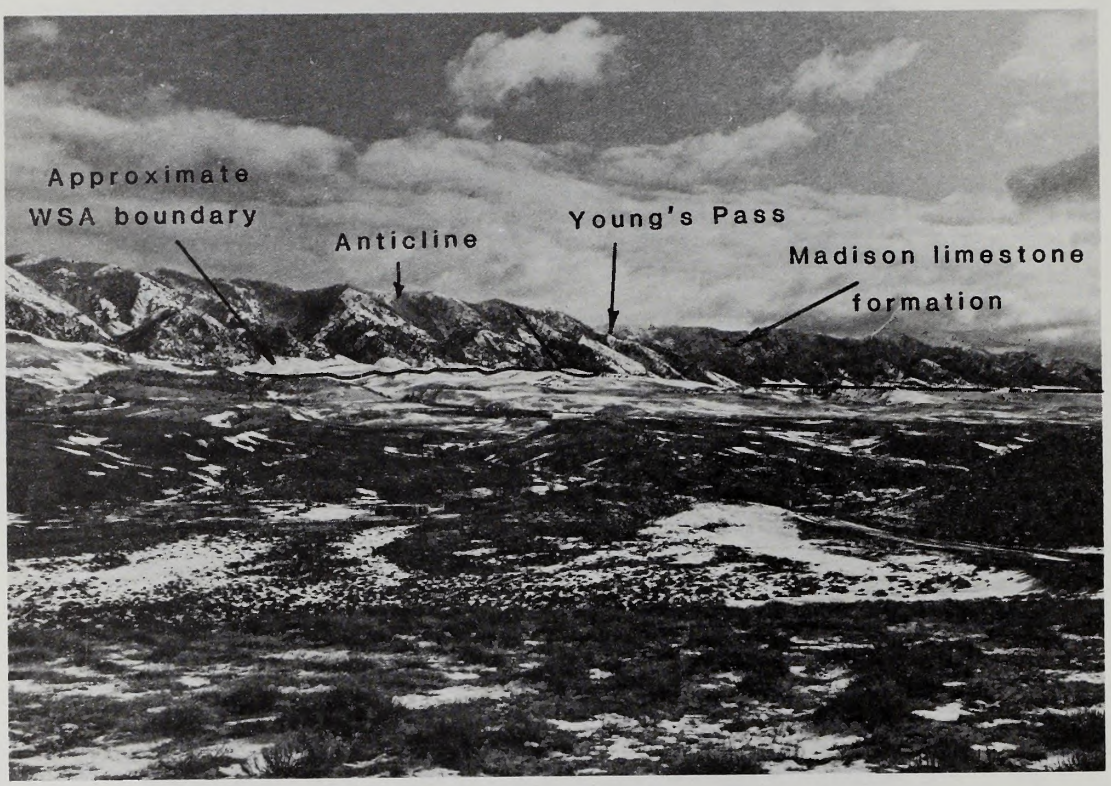
Geology. The Ferris Mountains are located on the south flank of the Sweetwater Arch, which is a broad northwest-southeast trending uplift in central Wyoming that stretches from the Wind River Mountains to the Freezeout Hills. A series of faults defines the southern boundary of this uplift. The Emigrant Trail thrust fault extends from the Muddy Gap area northwestward for approximately 50 miles. At least six mineral exploration drill holes intersect this fault. The northeast plate of the fault overlies the southwest plate at a 20-35 degree angle. Precambrian crystalline rocks have been placed over Paleozoic

PHOTOGRAPH 13. The Ferris Mountains Ranch and hay meadows, located near the WSA.

and Mesozoic sediments by a throw, at some points, of over 15,000 feet. To the east of the Ferris Mountains, near the north edge of the Hanna Basin, there is evidence to indicate that some thrusting has occurred, which has buried sediments beneath the Shirley and Seminoe mountains.

The conventional interpretation of the geology of the the Ferris Mountains is that they were formed by nearly vertical uplifts (Love 1970). Based on more recent work, the oil and gas industry has attempted to correlate thrusting to the west of the Ferris Mountains (Emigrant Trail thrust) with suspected thrusting near the north edge of the Hanna Basin to the east. This interpretation has resulted in a hypothesis that the Ferris Mountains have been involved in some recumbent folding and/or thrust faulting, which has placed sedimentary rocks underneath the Precambrian. Neither geologic interpretation can be discounted, considering our present knowledge of the Ferris Mountains. If the Ferris Mountains have been involved in thrusting similar to that in the Emmigrant Trail thrust fault or recumbent folding, the same potential for oil and gas exists. However, if the Ferris Mountains were formed by near vertical uplifts, the oil and gas potential of the Ferris Mountain WSA would be quite low.

On a more local scale, the Ferris Mountains consist of two anticlines trending N. 70 degrees W., which are separated by a smaller structure called the Young's Pass Syncline (photograph 14). Each of the two large anticlines expose



PHOTOGRAPH 14. Some geologic and topographic features of the Ferris Mountains.

blocks of Precambrian rocks. These Precambrian rocks are of igneous origin and vary in composition from diorite to granite. Geologic structures within the Precambrian rocks include shear zones and emplaced veins and dikes of various rock types, including pegmatite, calcite, quartz, and mafic rocks. The shear zones occur most often in zones of weakness where veins and dikes have been emplaced, but they also occur in the country rock. The shear zones often produce a gneissic texture in the shear zones themselves (Masters 1977).

Sedimentary rocks range from the Cambrian Flathead Sandstone through Quaternary pediment gravels, colluvium, and alluvium. Because of the steep dips and varying resistance to erosion, dip slopes of many sedimentary rock units can be observed along the south slope of the mountains. The Mississippian Madison Limestone, as an example, is present as a prominent silver-white structure on the south slope.

Mineralization. Sixteen oil and gas exploration wells have been drilled through Precambrian crystalline rock into underlying younger sediments in the Rocky Mountain region (Gries 1983). One of these wells is a producing oil well (70 barrels per day), and in approximately half the wells the presence of oil and gas occurs (Gries 1981). The one producing well is located in T. 32 N., R. 75 W., 6th P.M., and is an extension of the Glenrock South Field, where the Laramie Range is thrust northward over sediments on the south flank of the Powder River Basin. The Emigrant Trail thrust to the west of the Ferris Mountains has been drilled and preliminary findings indicate potential for oil and gas accumulations in this area. Two geophysical studies, one during the summer of 1982 and one during the early spring of 1983, have been conducted in and near the Ferris Mountains WSA. The results of these studies are not known.

The larger hardrock-mineral prospect sites in the Ferris Mountains are located in two areas. The Cherry Creek/Babb Mine area is located near Young's Pass, and the Spanish Mines area is located adjacent to the Ferris Mountains WSA on the east end. Small individual prospect pits are scattered throughout the remainder of the WSA.

The Cherry Creek/Babbs Mine area contains two adits and one large dozer cut. This area was reportedly explored for copper and tungsten during the late 1950s and early 1960s. Mr. William H. Wilson of the Wyoming Geological Survey examined this area on October 8, 1955, and noted two types of mineralization: (1) copper-quartz veins, and (2) pyrite and chalcopyrite, which is disseminated

in and forms veinlets in the brecchiated and silicified country rock. Traces of scheelite, a calcium tungstate, were found and a slight amount of radioactivity was attributed to the presence of allanite, a silicate. The former claimant in the area submitted a report by John P. Ely, consultant geologist, discussing a 1-foot thick quartz vein containing 10 percent copper, 5 percent tungsten, 0.11 ounces per ton gold, and 1.72 ounces per ton silver. This information does not correlate with BLM sampling in the area. The main Babbs Mine adit was mapped and sampled during the autumn of 1978 by BLM geologists. Four samples were taken from the quartz vein on which the adit was driven. The maximum copper content in one sample was 0.45 percent, with the average copper content being 0.19 percent. The maximum tungsten content was 37 parts per million (ppm). (One ppm is equal to 0.0001 percent. Elements present in less than 0.01 percent are expressed in ppm.) All gold contents were less than 0.02 ppm and silver was less than 1 ppm. The copper mineralization was sporadic and mostly in the oxidized form, although some sulfide minerals were found.

The dozer cut located above this adit was also examined on the same dates. The only mineralization observed was disseminated in the country rock. Five samples were collected from this working. The samples were assayed and the maximum values were 2.40 ppm gold, 6 ppm silver, 0.47 percent copper, and 115 ppm tungsten. Average values were 0.63 ppm gold, 2.4 ppm silver, 0.32 percent copper, and 33 ppm tungsten.

Most of the prospect pits scattered throughout the remainder of the WSA are small, the typical size being 2 to 4 feet deep and 3 to 5 feet across. They were generally dug into quartz veins that indicated the presence of copper. Some of the prospect pits are located on shear zones. Of all the prospect pits sampled, the highest copper content in any sample was 1.4 percent. Many of the samples contained less than 0.1 percent copper. Other metals were present in lesser amounts. Most of the quartz veins are discontinuous in nature, being traceable for only a few feet outside the prospect pit.

The Spanish Mines area, bordering the Ferris Mountains WSA on the east, contains numerous prospect pits and at least five adits. The Spanish Mines area is discussed by both Hendricks (1943) and Haff (1944). Hendricks examined some of the workings, sampled them, and concluded that the property showed no ore reserves and only slight mineralization of extremely low values. Mr. Haff examined the area and noted that the mineralization consisted of galena (lead sulfide), pyrite (iron sulfide), chalcopyrite (copper-iron sulfide), limonite (iron oxide), and traces of azurite and malachite (copper carbonates). Haff concluded that the area is in a structurally favorable environment with evidence of relatively strong local mineralization and intense hydrothermal action as suggested by conspicuous mineral alteration, particularly serpentinization. The claimant, Mr. William Burnside, reported that he made discoveries of commerical deposits of silver, lead, cobalt, and talc in the summer of 1973. No data are available on deposit size or grade, and no serious development work has been done for at least 4 years, although assessment work is continuing. A BLM inventory of the Spanish Mines area revealed most of the workings to be on quartz or quartz-chloride veins. Anomalous concentrations of lead, arsenic, and copper were present in various samples taken during this inventory. The BLM inventory concluded that no ore bodies were presently identified in the Spanish Mines area. The geologic conditions of the Spanish Mines area indicate a moderate potential for accumulation of mineral resources. The Ferris Mountains, outside the Spanish Mines area, have a low to moderate potential for the accumulation of mineral resources.

Environmental Consequences

Proposed Action - Wilderness Management and Alternative 3 - Enhanced Wilderness Management through Acquisition of Additional Lands. Under these alternatives, study of the area for potential mineral deposits would not be allowed except for aerial surveys and nonimpairing ground surveys conducted according to an approved plan. It is unlikely that much effort would be expended on mineral studies because mineral development, except for valid existing rights, would not be allowed under these alternatives. These alternatives result in identical impacts. The Enhanced Wilderness Management alternative would extend the impacts to the additional, acquired lands.

Alternative 1- No Action, Existing Management, No Wilderness. Mineral exploration would be allowed and if economically significant deposits were found, development would probably take place. If development took place, there would be an irreversible commitment of the resource.

Alternative 2 - Management of Primitive Values, No Wilderness. Assuming that the area would be withdrawn from mining location and mineral leasing, the consequences of this alternative would be similar to those of the Proposed Action.

Wildlife

Affected Environment

Introduction. Many species of mammals, birds, reptiles, amphibians, and fish are found in the Ferris Mountains WSA. A list of these species and their habitats is available for review in the Rawlins District office. The abundance and species diversity of wildlife is greatest in habitat types with high diversity in structure and species of vegetation. These high-priority habitat types include aspen-riparian, sagebrush-mixed grass, mountain shrub, and mixed conifer. The presence of surface water also contributes significantly to habitat value.

Big Game Mammals. Current Wyoming Game and Fish Department population objectives and present population estimates for the four major big game species (elk, deer, antelope, and bighorn sheep) are presented in Table 2-8. The population objective for each big game species is established and managed by herd unit. The WSA does not encompass the entire herd unit for each species. For elk and bighorn sheep, the WSA comprises a large portion of the habitat within the herd unit. For other species, such as antelope, the WSA makes up a very small portion of the habitat within the herd unit. Mule deer and Rocky Mountain bighorn sheep numbers are below the objective level, whereas elk and the north Ferris antelope herd are currently at or near objective levels. The south Ferris antelope herd is presently 2,900 animals over the objective.

Elk. The Ferris elk herd was established through a transplant of 25 Yellowstone elk in 1963 and 1964. Since that time, the herd has dispersed throughout the Ferris and Seminoe mountains and reached the population objective of 350 animals in the late 1970s. Recently, a slight decline to 250 animals occurred, mainly because of excessive harvest and immigration to the Green Mountain herd. More conservative harvest seasons have been initiated since 1979 through a

TABLE 2-8

FERRIS MOUNTAINS
BIG GAME POPULATIONS AND SEASONAL DISTRIBUTION

Species	Present Population Within the Ferris Mountains WSA[1]		Present Population Within the Total Herd Unit		Herd Unit Objective by 1985
	Summer	Winter	Summer	Winter	
Elk	110	100	350	350	350
Mule Deer	245	235	1,815	2,055	4,000
Antelope	1,850	1,200	6,300[2] 9,500[3]	7,700[2] 11,499[3]	7,000/8,500
Bighorn Sheep	6-12	6-12[4]	85	85	150[5]

[1]Based on population estimates for the three grazing allotments in the WSA as listed in the Divide Resource Area Unit Resource Analysis.

[2]North Ferris herd, 1981 postseason population (Wyoming Game and Fish Department annual Big Game Herd Unit reports).

[3]South Ferris herd, 1981 postseason population (Wyoming Game and Fish Department annual Big Game Herd Unit reports).

[4]Personal communication with Greg Hiatt (Wyoming Game and Fish Department biologist).

[5]Theoretical population level needed to produce six harvestable rams each years.

reduction in the number of permits, which should result in a population increase to the management objective.

The segment of the herd (about 100 animals) that inhabits the Ferris Mountains WSA winters from the east fork of Pete Creek to Little Cherry Creek near the base of the mountains (photograph 15). However, in the most severe conditions, these animals move north toward the Sentinal Rocks and Point of Rocks where windswept ridges are used as foraging sites. During the summer, these elk move atop the higher ridges throughout the mountain range, with a few cows and calves remaining in the lower riparian habitats and aspen stands.

Mule Deer. Approximately 2,000 mule deer inhabit the Ferris herd unit. The herd is rebuilding after a die-off during the severe winter of 1978-79. Within the WSA there are about 235 to 245 deer.

The herd is not migratory, but movements between seasonal ranges are evident and are influenced by winter storm patterns. During the summer, mule deer are widely distributed throughout the high elevations, as well as the lower ridges within the WSA. Animals concentrate near waters in deciduous-riparian aspen, and conifer habitat types. Winter storms force the deer out of the higher ranges onto the mountain shrub and sagebrush habitats where winter forage is available (photograph 16).

The Wyoming Game and Fish Department's population objective for this herd is projected to be 4,000 animals by 1985. At this level, populations are expected to fluctuate in response to yearly changes in carrying capacity and harvest success. Conservative, antlered-only seasons are expected to maintain the herd near the objective, with occasional doe-fawn seasons as needed.

Pronghorn Antelope. Two antelope herds inhabit the Ferris Mountains: the north Ferris herd and the south Ferris herd. The dividing line between these two herds is the mountain peaks, which runs east-west through the Ferris Mountains. Antelope do not use the dense conifer forests but prefer the open grassland or shrubland.

PHOTOGRAPH 15. Bull elk on its winter range.

PHOTOGRAPH 16. Mule deer on their winter range.

Consequently, most of the WSA is not used by antelope. Although the WSA is not important antelope habitat, it contributes water to the surrounding area, creating suitable habitat not only for antelope but for many other species as well.

Within recent years, the north Ferris herd has been increasing steadily, with minor fluctuations due to weather conditions and hunting seasons. The Wyoming Game and Fish Department's computer simulation model estimated a 1981 postseason population of 7,700 animals. Since the department's management objective is 7,000 antelope by 1985, liberal hunting seasons will be initiated to meet the 1985 objective.

The base and lower north slopes of the Ferris Mountains are spring, summer and fall range for this herd. As winter conditions become more severe, the herd moves north, continuing across the Carbon County line during the most severe conditions.

Wyoming Game and Fish Department information indicates that the south Ferris herd has experienced rapid population growth since 1973. Much of this increase has been the result of conservative hunting seasons and emigration of approximately 1,500 animals into the herd from the Red Desert herd during the winter of 1978-79.

The 1981 postseason population was about 11,400 animals (Wyoming Game and Fish

Department 1982). Current management efforts are directed toward a population objective of 8,500 antelope, with plans to adopt a new objective following public hearings before 1985.

The south Ferris herd is not migratory, although seasonal movements or shifts in distributions occur. Within the wilderness study area, this herd generally inhabits the sagebrush-mixed grass habitat during the spring, summer and fall. As winter weather sets in, these animals move south, away from the WSA onto the wind-blown south and southwest facing slopes.

Bighorn Sheep. Historical accounts from early explorers and settlers record the presence of bighorn sheep along the Sweetwater River, which probably included the Ferris Mountains. However, like other areas throughout the west, this bighorn population disappeared around the turn of the century.

The first recorded attempt by the Wyoming Game and Fish Department to establish a bighorn sheep herd in the Ferris and Seminoe mountains was in February 1958, when seven animals were tranplanted from the Whiskey Mountain herd near Dubois. Subsequent transplants added 13 sheep in December 1965 and 18 sheep in March 1967. A harvest was attempted in 1962 and 1963, with one legal ram taken. The season was later discontinued because of a lack of harvestable animals.

Another 37 bighorns were released in the Seminoe Mountains in December 1976 and 49 more in 1980. Since that time, an accurate population count or classification has not been obtained; however, the best estimate to date is approximately 85 bighorns. Of these 85 animals, about 6 to 12 are yearlong residents of the Ferris Mountains. The management objective for this herd is 150 sheep, with another transplant planned for 1984 or 1985.

Rocky Mountain bighorn sheep are characterized as mountain dwellers with a strong affinity for rugged, steep, precipitous terrain or open ridges and slopes. These animals appear to thrive on late, successional mountain grassland communities where grass and grasslike plants dominate, with some shrubs available (Longhurst 1977).

The habitat requirements for bighorn sheep seem to be keyed to good foraging sites near escape cover (terrain). Studies have shown that these animals prefer open grassy ridgetops, slopes, or benches within 100 meters of rocky outcrops, precipitous cliffs or steep rocky slopes (Oldemeyer 1971; Shannon et al. 1975; and Haas 1979). During light, powdery snowfall, steep slopes with good grass production are preferred. However, when snow conditions are crusted or over 2½ feet deep, windblown ridges are used. Summer habitat consists of lush grassy slopes and rocky areas near open water. During lambing (first and second week of June), the ewes and lambs are restricted to rugged, rocky outcrops and cliff areas that provide security against predators.

Bighorn sheep are generally tolerant of human intrusion, depending on hunting pressure and human encounters. Unhunted and unharrassed sheep frequently can be closely approached by observers, but hunted animals retreat to farther distances, indicating that sheep learn to fear man. Geist (1971) observed that bighorns will abandon areas when they are harrassed. During severe winter periods, when bighorns are at or near body-maintenance, energy budgets, any factor that increases energy expenditures or decreases forage intake can be debilitating.

Other Big Game Mammals. Mountain lions, black bears and moose are known to occasionally frequent the Ferris Mountains. A mountain lion was killed on state highway 287 just west of the WSA in August 1982. A cow and calf moose were seen on Pete Creek during the summer of 1982.

Small Game Mammals. Small game mammals within the WSA include the desert and mountain cottontail rabbit, snowshoe hare and red squirrel. Snowshoe hares and red squirrels inhabit the coniferous forests, usually at higher elevations, and the desert cottontail is generally found at the lower elevations. Population levels and habitat conditions are not known.

Game Birds. Three species of upland game birds are found within the wilderness study area. Sage grouse, blue grouse and mourning doves are all present in sufficient populations to allow a hunting season.

Blue Grouse. Blue grouse are found on the north side of the WSA; they inhabit the aspen, mountain shrub, and conifer habitat types. Pole Canyon and the upper part of Pete Creek provide excellent brood-rearing habitat for blue grouse. The population within the Ferris Mountains is considered stable, based on harvest statistics.

Sage Grouse. Population stability of the sage grouse is dependent on the maintenance of the sagebrush habitat type. The type of sagebrush stand and its particular use varies from season to season. Although no strutting grounds are found within the WSA, excellent brood-rearing habitat exists along Muddy Creek, Cress Creek and in the southeast corner of the WSA. These areas contain

drainage bottoms, moist meadows, and riparian vegetation, which offers succulent forbs and insects for young sage grouse. Based on harvest statistics and population data, sage grouse populations are stable within the WSA.

Mourning Dove. Mourning doves utilize a wide variety of habitat types that are usually associated with a water source. Doves feed mainly on seeds, preferring wheat, doveweed, and pigweed. The lower elevation sagebrush-mixed grass habitat is probably the most used habitat type by this species. By mid-September, mourning doves gather together in large flocks and migrate south for the winter.

Nongame Wildlife. Many species of nongame wildlife are found in the WSA. A list of these species and their habitat types is available for review in the Rawlins District office.

Raptors. Because raptors occupy a position at the top of the food chain, they are considered important nongame species. Not only do raptors serve as biological indicators of environmental quality, they also contribute to the "wilderness experience" when viewed by nonconsumptive wildlife users. The rocky cliffs that make up part of the Madison Formation in the WSA provide excellent nesting habitat for many raptors, particularly prairie falcons and golden eagles. Seven active prairie falcon eeries, one active golden eagle nest, one active Swainson's hawk nest, and one active Cooper's hawk nest have been found within the WSA.

Threatened and Endangered Species. The U.S. Fish and Wildlife Service lists the bald eagle, peregrine falcon, and black-footed ferret as possible inhabitants of the WSA. No bald eagle nests or winter roosts are located within the WSA. A few prairie dog towns occur along the periphery of the WSA, but none has been found in the WSA. Since prairie dogs are the main food item for black-footed ferrets, ferrets probably do not inhabit the WSA. Peregrine falcons have been seen in the vicinity of the WSA for several consecutive years. A helicopter and ground survey during the summer of 1982 failed to discover any peregrine eeries or roosts. However, the Madison Formation cliff faces provide high-potential nesting habitat for peregrines.

No designated critical habitat is located within the WSA.

Fisheries. The headwaters of Pete Creek and Cherry Creek contain a small number of brook trout. The east fork of Cherry Creek receives a few days of fisherman use each year.

Environmental Consequences

General Information. The Proposed Action and Alternative 3 have similar impacts on wildlife. Alternative 1 could have the greatest impact on wildlife if extensive mineral exploration and development occurred. Under Alternative 2, wildlife impacts would depend on the success of mineral withdrawal.

A biological assessment of endangered species in relation to the Proposed Action and alternatives is being prepared and will be completed before the final EIS is issued. The Proposed Action and all the alternatives probably would not have an effect on black-footed ferrets or bald eagles. The potential effect to peregrine falcons under Alternative 1 could be mitigated with a buffer zone and seasonal stipulations.

Proposed Action - Wilderness Mangement and Alternative 3 - Enhanced Wilderness Management through Acquisition of Additional Lands. Under these two alternatives, a natural distribution, number, and interaction of indigenous species of wildlife would be sought. Natural processes would be allowed to occur in wilderness ecosystems, which includes fish and wildlife populations, as much as possible without human influences. If they were compatible with wilderness management, Wyoming Game and Fish Department management objectives for big game species would be maintained. The acreages of habitat types with high wildlife values and the overall vegetative mosaic would probably remain similar to the present condition because of the continuation of livestock grazing and wilderness fire management policies. Both alternatives would ensure the long-term protection of wildlife habitat.

Big Game. Elk, mule deer, antelope, bighorn sheep, black bears, and mountain lions would not be adversely affected by these alternatives. Exclusion of activities such as road building, timber harvesting and mineral development would help ensure long-term preservation of big game habitat. Acquisition of private and state lands under the Enhanced Wilderness alternative would provide long-term benefits to big game. The amount of riparian habitat in the WSA would be increased, providing additional forage, cover and water for big game. The private parcels along the northern boundary of the WSA are important elk winter ranges.

State section 16 is also winter range for elk and yearlong range for mule deer. Acquisition of state section 36 would add additional elk, mule deer,

and bighorn sheep summer habitat to the WSA. This section is almost completely forested with several species of conifers.

Although human activities (backpacking, hiking, photography) might initially increase in the WSA, the increase is not expected to be large or cause significant displacement of big game or alterations in normal behavior.

Small Game Mammals and Game Birds. Small game mammals and game birds would not be significantly affected by these alternatives. Enhanced wilderness management through the acquisition of private and state lands would protect important brood-rearing habitat for sage grouse and blue grouse (particularly the parcels along Pete Creek and Pole Canyon). Long-term protection of smallgame mammal habitat and game bird habitat would be ensured under these alternatives.

Nongame Wildlife. These alternatives would provide long-term protection of nesting habitat for raptors and other avian species. If there were an increase in human activity, it would not be great enough to disrupt nesting activity.

Since the overall vegetative mosaic would remain similar to the present condition, the population and diversity of nongame species would not be affected. Acquisition of the private riparian habitat, where species diversity is high, would ensure the long-term protection of valuable nongame habitat.

Fisheries. The initial increase of visitors to the WSA would not have any impact to the limited fishery in the area.

Alternative 1 - No Action, Existing Mangement, No Wilderness. The major difference between this alternative and the Proposed Action, as it affects wildlife, is the continuation of mineral exploration and leasing. Although wildlife habitat would be protected under this alternative, there would be no assurance of long-term wildlife habitat protection. Since mineral values of the WSA are unknown and future mineral demands are uncertain, the extent of future mineral activity and its effect on wildlife cannot be quantified. To mitigate potential impacts to wildlife from mineral activities, new roads should be planned to minimize vegetative disturbance in priority habitat types and in areas intensively used by wildlife.

If pipelines were installed, methods that minimize habitat disturbance such as brush beating should be used instead of blading. Intensive reclamation of disturbed areas and ORV closures would help reduce impacts to wildlife. Wildlife stipulations in the Divide Management Framework Plan, which include buffer zones for raptor nests and seasonal restrictions on big game crucial winter ranges, should be closely followed.

Big Game. The worst case, under this alternative, would be extensive mineral activity over the entire WSA, causing elk, mule deer and bighorn sheep to be displaced to other mountain ranges (Green Mountain or the Seminoe Mountains) and long-term disruption of habitat. Antelope would not be significantly impacted since the adjacent sagebrush-mixed grass habitat is utilized more extensively than the conifer types within the WSA. This worst-case scenario would cause unavoidable adverse impacts to big game habitat.

The past situation and the most likely future case would be small, localized mineral exploration activities, with very little surface disturbance. Small quantities of big game habitat could be lost until the disturbed areas were reclaimed. Human activities associated with small scale mineral activities might have locally significant effects on big game distributions and habitat utilization by concentrating animals in smaller areas.

Small Game Mammals and Game Birds. Mineral development would decrease the amount of important small game mammal habitat and game bird habitat. The significance of this loss of habitat would depend on the amount of disturbance in high-priority habitats, the nature of the disturbance and the success of reclamation. Habitat disturbance would probably be minimal.

Nongame Wildlife. By using a buffer zone, cliff nesting sites for raptors would be protected, and placing seasonal restrictions on mineral exploration and development would reduce impacts to raptors. Disruption of high-priority habitats would result in a decline in the number and diversity of small nongame species.

Alternative 2 - Management of Primitive Values, No Wilderness. The impacts to wildlife under this alternative would be similar to those identified under the Proposed Action. The main difference between the two alternatives is that this alternative does not ensure the long-term protection of wildlife habitat.

Assuming a mineral withdrawal can be obtained, no mitigation measures will be necessary. Management of primitive values would benefit wildlife more than the No Action alternative because it would emphasize habitat management and discourage mineral activities.

Socioeconomics

Affected Environment

Economic and Social Conditions. This section describes the socioeconomic conditions that exist in the proximity of the WSA.

Population, Employment, and Income. The Ferris Mountains WSA is located totally within Carbon County, Wyoming. The 1980 population of Carbon County was 21,896 persons, an increase of 64 percent from 1970 (U.S. Department of Commerce 1981).

Mining ranks at the top of economic activity in Carbon County. Twenty-five percent of the county's labor force is employed in the mining sector, and it provides over 45 percent of the total earnings for the county (U.S. Department of Administration and Fiscal Control 1981).

Recreation. BLM's recreation specialists in the Rawlins District report frequent nonhunting recreational use in the Ferris Mountains WSA. Intensive visitor use data are not available to provide a basis for accurately estimating recreational expenditures. However, hunting is known to be a major recreational outlet in the Ferris Mountains WSA. No records have been kept specifically for the WSA. For the areas surrounding and including the WSA, 1980 expenditures made on hunting recreation totalled approximately $131,000: $53,000 from antelope (400 hunter days), $62,500 from mule deer (850 hunter days), and $15,200 from elk (268 hunter days)(Wyoming Game and Fish Department 1981). Although no estimates are available to identify the number of angler days, there is some additional economic value associated with fishing in the area. Rocky Mountain bighorn sheep have been introduced into the area, which will add to the economic value of hunting recreation in 3 or 4 years. Little, if any, of the expenditures on antelope hunting originates in the WSA. However, about 30-50 percent of the deer hunting expenditures and virtually all of the elk hunting expenditures can be directly attributed to the WSA. No change in these expenditures are expected from the Proposed Action or any of the alternatives.

Agriculture. The Ferris Mountains WSA contributes directly to the economic structure of livestock operations in the vicinity. However, the impacts imposed on agriculture would be negligible under the Proposed Action or any of the alternatives; therefore, no further discussion is necessary (see the Livestock Grazing section of this EIS).

Minerals. As identified in the Minerals section of this document (Affected Environment, Mineralization), the economic values of the minerals located in the WSA are negligible under current market conditions.

Forests. Because of the limited access, steep slopes, availability of other forest reserves in the proximity (Green Mountain, Shirley Basin, U.S. Forest Service lands, etc.) and the age of the stands, commercial use of the timber in the WSA has been nonexistent in recent years.

Lifestyles and Attitudes. Generally, the people of Carbon County pride themselves on their western way of life, which includes small town living with the customs of friendliness, love of the outdoors, and adherence to traditional, conservative values.

Lifestyles in south-central Wyoming have been altered somewhat by the mixing of people from diverse economic and social backgrounds. In an area that was historically oriented towards agriculture, there exists a strong influence towards an energy-oriented economy.

Public attitudes toward wilderness are varied. See the Socioeconomic section in the Adobe Town discussion and the Appendix for more information on this topic.

During the scoping process, written comments regarding the Ferris Mountains WSA were received from concerned members of the public. Of the comments received, 80 percent favored wilderness designation of the area. Several comments were received from various areas throughout the nation; however, most were from local residents familiar with the study area. These comments are on file in the BLM Rawlins District office.

Environmental Consequences

Proposed Action - Wilderness Management and Alternative 3 - Enhanced Wilderness through Acquisition of Additional Land. As wilderness, little change is expected in the regional economy from the standpoint of population, employment and income. As is stated in the Mineralization section, this WSA contains low potential for hardrock mineralization. Long-term oil and gas exploration would also be precluded under either action. In addition, all other mineral development and exploration would not be authorized.

Since BLM would seek to acquire adjacent lands under the Enhanced Wilderness alternative, administrative costs to exchange or otherwise acquire those additional lands would affect the

federal budget. Also, any activity on these adjacent lands, once acquired, which are inconsistent or incompatible with wilderness use, would be curtailed.

Timber harvesting would be precluded as well as the associated revenues, jobs, etc. Currently, no commercial timber is harvested from the Ferris Mountains. However, if long-term demand created a viable market for the timber, it would be unavailable to society. At present there is no estimate as to the market value of the timber.

The social environment is not expected to change under either action.

Alternative 1 - No Action, Existing Management, No Wilderness. No noticeable change in the regional or local economy would be expected under this alternative.

Local and regional lifestyles and attitudes are not expected to change. Some pro-wilderness groups might express dissenting opinions if the No Wilderness alternative were adopted.

Alternative 2 - Management of Primitive Values, No Wilderness. The impacts to mineral components of the Affected Environment would be much the same as those under the Proposed Action, Enhanced Wilderness alternative.

Little change is expected to occur either in the regional or local economy or in societal lifestyles or attitudes. Many of the aesthetic values associated with wilderness areas would be preserved under this alternative.

Conclusions. Based on public attitudes from national and statewide surveys regarding no additional wilderness needs, the alternative that offers optimal resource management from a socioeconomic standpoint is Alternative 2, Management of Primitive Values, No Wilderness. It does not add to the NWPS, thereby negating the opposition to adding additional wilderness. The area lends itself to primitive area management without any unduly large administrative expenditure.

From an economic viewpoint, the least optimal alternative is Alternative 3, Enhanced Wilderness Management through Acquisition of Additional Lands. Planning and administrative costs are high under this alternative, particularly in implementing land exchanges. It contributes additional wilderness acreage to the NWPS, thereby introducing statewide public sentiment against the decision. This alternative would, however, seem to better suit the desires of the local populus and those having a knowledge of the area. Again, during the scoping process, 80 percent of the comments favored wilderness designation.

Cultural Resources

Affected Environment

Information concerning cultural resources in the Ferris Mountains WSA has been obtained from a literature review. No field inventories have been conducted within the study area. A literature review indicated that several field inventories had been conducted as a result of range and energy development in the area surrounding the study area. These inventories indicate that the surrounding area, and in all probability the study area, has been occupied by humans for at least 12,000 years.

Although no field inventories have been conducted within the study area, two prehistoric cultural resource sites have been reported but not recorded in the area. These cultural resource sites appear to represent short-term camps associated with hunting and lithic procurement activities. The prehistoric people who occupied the area were hunters and gatherers whose movements were to a large degree determined by seasonal changes in resource availability. These people generally traveled in small bands and spent only a limited amount of time in any one location. A particular cultural resource site might represent a one-time use of a location or repeated use of the location for thousands of years. A diagnostic projectile point located at one of the reported cultural resource sites in the study area indicated that the site was utilized between 4,000 and 4,600 years ago. A detailed study of this location might reveal other time periods of use.

The historical people who utilized the study area were primarily involved in stock grazing, mineral exploration, and recreation. Stock grazing was the most common activity in the area during historical times. Mineral exploration has occurred at varying levels of intensity since the late 19th century. Recreational use of the area has increased in the second half of the 20th century, reflecting the increased population of the surrounding area.

The density of cultural resource sites within the study area cannot be estimated without field inventories. The geographical location and the diversity of geological and ecological resources within the study area indicate a likelihood of a

relatively high density of cultural resource sites. An intensive field inventory would probably reveal a complete cross section of human occupation of the area for at least 12,000 years. The majority of the cultural resource sites probably would be relatively recent, and the frequency of occurrence of the cultural material would decrease as the age of the material increased.

Environmental Consequences

Proposed Action - Wilderness Mangement and Alternative 3 - Enhanced Wilderness Management through Acquisition of Additional Lands. The withdrawal of the area from mineral entry would have a beneficial effect on cultural resources. The constraints placed on the management of cultural resources by the standard operating procedures for mineral entries would be removed by this action. The prohibition of development and use of ORVs would also be beneficial because it would reduce the number of cultural resource sites that would be adversely impacted. Wilderness management would also allow the preservation of the environmental integrity of cultural resource sites, as well as the sites, for future study.

The Proposed Action would cause a slightly adverse impact to cultural resources, if there were an increase in pedestrian traffic. Additional traffic might increase the collection of individual artifacts, or in extreme cases, might endanger entire cultural resource sites. The low priority assigned to cultural resource inventories in areas where development is not planned increases the probability that significant cultural resources will be lost as a result of natural factors, such as erosion, before being recorded.

The Enhanced Wilderness Management through Acquisition of Additional Lands alternative would have almost the same effect as the Proposed Action, only it would involve more land. The public lands to be exchanged to obtain the private and state lands would require a cultural resource inventory before the exchange. The transfer of a significant cultural resource from federal ownership without adequate conditions for its protection would be an adverse effect.

The overall effect of the implementation of the Proposed Action or the Enhanced Wilderness Management through Acquisition of Additional Lands alternative would be beneficial. The withdrawal of the area from mineral entry and prohibiting development would result in at least a portion of the cultural resources in the district being maintained in a completely natural setting.

Alternative 2 - Management of Primitive Values - No Wilderness. The implementation of this alternative would have almost the same effects as the Proposed Action. There probably would be less pedestrian traffic, which might reduce the number of individual artifacts collected. The overall effect of the implementation of this alternative would be beneficial for cultural resources. The withdrawal of the area from mineral entry would significantly reduce the likelihood of unavoidable adverse impacts.

Alternative 1 - No Action, Existing Management, No Wilderness. The implementation of this alternative would result in no change for cultural resources. The existing standard operating procedures would continue to protect the cultural resources within the constraints imposed by these procedures for mineral entries.

The overall effect of implementing this alternative would be a slightly adverse effect to cultural resources, which would increase in direct proportion to the amount of future mineral development in the area. An unavoidable adverse impact to cultural resources would result, regardless of the action taken, as a result of erosion, trampling by animals, and surface collection of artifacts. The unavoidable adverse impacts resulting from the No Action alternative would be the greatest, but would be minimized as much as possible by the standard operating procedures.

Cultural resources are nonrenewable. Any action taken in the short term may adversely affect them. Any short-term use would make cultural resources unavailable for long-term study, use and enjoyment.

Irreversible and irretrievable losses of cultural resources would not be great under any alternative, but if the No Action alternative were implemented, losses would probably exceed those resulting from the other alternatives, particularly if any resource exploration and development activities occurred in the WSA.

Visual Resources

Affected Environment

Public lands in the Ferris Mountains WSA are very scenic. They consist of an abruptly rising mountain wall with forested slopes and contrasting rock outcrops. The mountains can be viewed for 20 miles from several directions, and they provide high-quality scenery for travelers on highways 287 and 220 (photographs 10 and 14). Scenic quality of the WSA has been rated as Class A.

The character of the landscape in the WSA is determined by four basic elements: color, line, form, and texture. The dominant colors in the WSA are the greens of vegetation and the whites, reds, and browns of soils and rock outcrops. Seasonal color changes are minimal and are limited to deepening in the spring and summer. Lines are distinct in the stratification of soil and rock outcrops and along topographic features. Form varies from steep forested slopes to rugged rock outcrops. Texture results from different vegetation types and surface rock and soil features. These four basic elements combine to give the WSA the overall appearance of being rugged, natural and very scenic.

With the exception of the Babb Mine, a mineral exploration site, the area is virtually free of cultural modifications. The overall impact of these intrusions on the area's visual resources is low in comparison to the total area and the large number of acres of undeveloped land.

Environmental Consequences

Proposed Action - Wilderness Management and Alternative 3 - Enhanced Wilderness through Acquisition of Additional Lands. Implementation of this alternative form of management would preserve the visual resources of the Ferris Mountains in their present condition. This would be long-term protection, which could only be lifted by congressional action. Alternative 3 would extend protection to the private and state lands identified for acquisition.

Alternative 1 - No Action, Existing Management, No Wilderness. Under this alternative, the option would remain open to allow activities in the Ferris Mountains that could adversely affect visual resources. Continuing availability of the area for mineral exploration and development or other extracting industries, such as timber harvesting, in the future would also adversely affect visual resources.

Alternative 2 - Management of Primitive Values, No Wilderness. This alternative would provide protection for visual resources, which would be about equal to that provided by wilderness designation if Congress approved mineral withdrawal for the area. Without the withdrawal, long-term protection of visual resources would not be assured.

If timber harvest activities or mineral exploration occurred, it would be difficult to mitigate the impacts to visual resources. If mineral exploration activities such as oil and gas drilling were located at the base of the mountains, they would have a fairly minimal impact to visual resources.

CHAPTER III

BACKGROUND MATERIAL

APPENDIX

Public Attitudes toward Wilderness

In the study, "Attitudes Toward Wilderness: A Limited Survey of Wilderness Attitudes in Selected Wyoming Communities" (Warren and Warder 1978) conducted by the University of Wyoming for the Bureau of Land Management, the following ideas were expressed.

1. Public antipathy toward additional wilderness in Wyoming, particularly on BLM land.
2. Favorable attitude toward a multiple-use concept on public lands.
3. General perception that wilderness is for "a selected few."

The study by Opinion Research Corporation (1978, a-c) which analyzed public attitudes in Montana, Idaho, and Wyoming found attitudes similar to the previous study.

1. The current acreage set aside as wilderness is adequate (52-58 percent).
2. Sixty-four percent of those people polled favored energy development in potential wilderness areas.

Research Services, Inc. of Denver, Colorado, recently completed a study for the Wyoming Heritage Society (Wyoming Heritage Society 1982).

Of the 601 Wyoming residents responding, a majority of residents (81 percent) were aware of the 2.2 million acres currently set aside as wilderness in Wyoming. Of these, 67 percent of the people believed this acreage to be adequate.

Another survey polled every Wyoming voter. It was conducted in 1979 and in December 1981 by Wyoming U.S. Congressman Richard Cheney. The 1979 questionnaire asked for comments on the desirability of creating more wilderness areas in Wyoming. The response was:

> 14 percent: As much qualified acreage as possible should be recommended for wilderness designation in order to protect the land.
>
> 40 percent: Some areas should be designated as wilderness, others should be open to more uses.
>
> 48 percent: There is already considerable wilderness acreage in Wyoming, and any additions should be kept to a minimum.

The 1981 questionnaire asked a slightly different question regarding wilderness. Over 12,000 Wyoming residents responded to: "A 1964 federal law allows development of oil and gas and other minerals that may exist beneath lands set aside by Congress as national wilderness areas, such as the Washakie Wilderness Area in Wyoming. Which of the statements below best represents your own feeling about exploration and development activity in wilderness areas?"

> 58 percent: Energy and minerals are where you find them. While care should be taken to protect the environment, these resources need to be developed, even in wilderness areas.
>
> 39 percent: I am all for developing our energy resources, but not in wilderness areas. Congress was wrong to allow such activity and it should change the law so that energy development in wilderness areas would be prohibited.
>
> 3 percent: No response.

In summary, public attitude in these studies showed opposition to additional wilderness favoring a multiple-use concept for public land management. Energy development appeared to be paramount to any decision that "locked up" an area through wilderness designation.

CONSULTATION AND COORDINATION

Introduction

The Adobe Town/Ferris Mountains Wilderness Draft Environmental Impact Statement was prepared by specialists from BLM's Rawlins District office with assistance from the Wyoming State office. Disciplines and skills used to develop this EIS were: vegetation and range use, soils, recreation, geology, climate, economics, wild horses, cultural resources, public affairs, wildlife and word processing. The writing of the EIS began in July 1982; research began in 1978 with the wilderness review required by FLPMA. The process included inventories of resources, public participation and coordination with other agencies, organizations and individuals. Care has been exercised to ensure that the public was consulted and informed throughout the wilderness review process.

An active public involvement process aided in developing this EIS. Public opinion was elicited through a public meeting in Rawlins, mailings to an extensive list of groups and individuals, personal interviews, and a notice in the *Federal Register*. The public's role will continue to be important in developing this EIS.

Agencies and Organizations Consulted

The Adobe Town/Ferris Mountains Wilderness EIS team consulted and/or received comments from the following during the preparation of this draft EIS.

Business and Industry

Chevron USA, Inc.
Atlantic Richfield Company
Petroleum Association of Wyoming
Amoco Production Company (USA)
Tom Brown, Inc.
Sun Exploration and Production Company
True Oil Company
Koch Industries, Inc.
Paintbrush Petroleum Company
Champlin Petroleum Company

State Agencies and Organizations

Wyoming Department of Environmental Quality
Wyoming Game and Fish Department

Federal Agencies

U.S. Environmental Protection Agency
U.S. Fish and Wildlife Service
U.S. Minerals Management Service

Organizations

The Nature Conservancy
Wyoming Church Coalition
Continental Divide Trail Society
Wyoming Wilderness Association
Sierra Club

Individuals

Anthony M. Rigano, Sr.
Larry DiBritto
Gary Raymond
Ken Nanri
William H. Romme
Michael J. Atherton
Don Kortes
Gerald Kortes
Leonard Hay
Jeffrey Sweet
Elza Eversole
Kathleen Sun
Becky Darbee
Bart Koehler

Comments Requested

The Rawlins District office maintains a lengthy wilderness mailing list. At each point in the overall wilderness review/EIS process when public input is necessary or when some tentative decision regarding the WSA is reached, materials and/or information are sent to all groups, organizations, and individuals on the mailing list. The mailing list includes the following:

Agencies of the federal government
Agencies of the state government
Local government
Members of state legislature
Wyoming congressional delegation
County commissioners
Stockgrowers organizations
Conservation groups and organizations
Industrial associations
Business and industry
Ranchers
Sportsmen
Individuals who have expressed interest in the wilderness review process or individual WSAs.

Consistency with Other Plans

FLPMA requires that BLM plans be as consistent as possible with other agency plans, while considering federal laws, policies and regulations.

Other federal agency, city, county, and state plans in the EIS area were considered in the preparation of this report. No inconsistencies were found with any of those plans.

LIST OF PREPARERS

Team Leader

Bob Tigner

Qualifications: Natural Resource Specialist, Bureau of Land Management, 2 years; Wildlife Biologist (Research), U.S. Fish and Wildlife Service, 21 years; Ph.D., Biology, University of Colorado; M.S., B.S., Wildlife Management, Colorado State University.

Responsibility: Overall Direction and Management.

Technical Coordinator

Gary Long

Qualifications: Outdoor Recreation Planner and Wilderness Coordinator, 4 years, and Land Use Planner (Economist), 4 years, Bureau of Land Management; Research Assistant, University of Wyoming, 1 year; B.A., Geography, University of Wyoming.

Responsibility: Livestock Grazing, Recreation, Visual Resources, Wilderness, Team Coordination.

Archeologist

Michael T. Bies

Qualifications: Archeologist, Bureau of Land Management, 1 year; Archeologist, U.S. Forest Service, 1½ years; Archeologist, Historical Archeologist, Historian, Contract Cultural Resource Management, private industry and various federal agencies (Oregon, Washington, Idaho, and Montana), 3 years; M.A. in progress, Anthropology, University of Idaho, Moscow; B.S. History and Sociology/Anthropology, University of South Dakota, Vermillion.

Responsibility: Cultural Resources

Economist

Tom Crawford

Qualifications: Economist, Bureau of Land Management, 2 years; Research Specialist, New Mexico State University, 6 months; M.S., B.S., Agricultural Economics, New Mexico State University.

Responsibility: Economics

Editorial Assistant

Tina Warren

Qualifications: Editorial Assistant and AMtext Operator, 4 years; Clerk/Typist (Mag Card and System 6 operator), 2½ years, Bureau of Land Management.

Responsibility: Word Processing and Phototypesetting

Geologist

Bob Janssen

Qualifications: Geologist, Bureau of Land Management, 7 years; M.S., Geology, Colorado State University, B.S., Earth Science/Regional Analysis, University of Wisconsin.

Responsibility: Geology, Minerals, Paleontology.

Range Conservationist

Chuck Ashton

Qualifications: Range Conservationist, Bureau of Land Management, 3½ years; B.S., Range Management and Biology, Utah State University.

Responsibility: Livestock Grazing.

Wildlife Biologist

Brad Nelson

Qualifications: Wildlife Biologist, Bureau of Land Management, 4 years; Raptor Research Specialist, Appalachian Environmental Laboratory, 1 year; M.S., Wildlife Management, Frostburg State College; B.S., Animal Science, University of Maryland.

Responsibility: Wildlife.

Writer/Editor

Beverly Kolkman

Qualifications: Writer/Editor and AMtext Operator, Bureau of Land Management, 3 years; Reports Officer and Intelligence Analyst, U.S. government (Middle East and Washington, D.C.), 7 years; B.A. History and Anthropology, University of Colorado, Boulder.

Responsibility: Editing.

Technical Review

Wayne Erickson, Outdoor Recreation Planner, Wyoming State office.
Mike Karbs, Chief of Planning and Environmental Assistance, Rawlins District office.
Ed McTaggart, Environmental Coordinator, Wyoming State office.
Chuck Wilkie, Team Leader, Casper District office.

Photography

Wyoming Game and Fish Department
Bureau of Land Management
Gary Long, Rawlins District office
Bob Springer, Wyoming State office
Bob Tigner, Rawlins District office

Printing Coordination

Jerry Carter, Printing Management Specialist, Wyoming State office

Cartography

Shelly Peele, Cartographic Technician, Wyoming State office
Esther Simons, Cartographic Technician, Wyoming State office

Cover Design

Carol Ross, Illustrator, Wyoming State office
Roger Lawrence, Illustrator, Wyoming State office

GLOSSARY

ADIT. A horizontal entrance into a mine open at one end only.

ADMINISTRATIVELY ENDORSED WSA. An area recommended to the Congress for designation as wilderness by the present or past presidential administration.

AERIAL GUNNING. The use of low flying aircraft, either fixed or rotary wing, in predator control activiites. The pilot flies the aircraft over areas where coyotes are likely to be found and the gunner shoots them with a shotgun.

ALLUVIUM. Unconsolidated material deposited relatively recently in geologic time by a stream or other body of running water.

ANTICLINE. An upward fold of rock along a linear axis.

ARKOSIC SANDSTONE. Sandstone containing large amounts of feldspar, quartz and detrital minerals.

AUTHIGENIC CLAY. Clay formed in place from other minerals after deposition and burial of the original sediment.

AVIAN. Relating to or derived from birds.

BRECCIATED. Broken into an accumulation of angular fragments.

BRUSH BEATING. A mechanical process where the brush or aboveground vegetation is chopped, with minimal disturbance to the soil and plant roots.

CAMBRIAN. The earliest period in the Paleozoic era. From 570 to 500 million years before present.

CHALCOPYRITE. A bright brass-yellow, metallic mineral; the composition of which is $CuFeS_2$. The most imporant ore of copper.

CLASS A SCENERY. Areas that combine the most outstanding characteristics of the scenery rating factors: landform, vegetation, water color, influence of adjacent scenery, scarcity, and cultural modifications.

CLINOPTILOLITE. A specific zeolite mineral.

COLLUVIUM. Loose incoherent deposits at the foot of a slope or cliff, brought there primarily by gravity.

COLOR. The property of reflecting light of a particular wavelength that enables the eye to differentiate otherwise indistinguishable objects.

COUNTRY ROCK. The predominant igneous or metamorphic rock type into which other rocks have been intruded.

CROWNED AND DITCHED ROAD. A constructed road graded to facilitate drainage.

CULTURAL MODIFICATION. Any manmade change in land, waterform or vegetation (roads, bridges, buildings, fences); the addition of a structure which creates a visual contrast to the natural character of a landscape. A negative cultural modification is disharmonious with the existing scenery. A positive cultural modification can actually complement and improve a particular scene by adding variety and harmony.

CULTURAL RESOURCES. Those fragile and nonrenewable remains of human activity, occupation, or endeavor reflected in districts, sites, structures, buildings, objects, artifacts, ruins, works of art, architecture, and natural features that were of importance in human events. These resources consist of (1) physical remains; (2) areas where significant human events occurred, even though evidence of the event no longer remains; and (3) the environment immediately surrounding the actual resource. Cultural resources, including both prehistoric and historic remains, represent a part of the continuum of events from the earliest evidences of man to the present day.

CRUCIAL WINTER RANGE. An area of crucial importance to the survival of a local wildlife population during the periodic occurrence of severe winter conditions.

DATA ANALYSIS UNIT (DAU). A group of big game animals that comprise a herd and on which information is collected and analyzed as one unit. Less than 10 percent immigration or emigration of animals occurs within a DAU.

DETRITAL. Composed of rock and mineral fragments removed from existing rock by mechanical means and transported from the place of origin.

DIAGNOSTIC PROJECTILE POINT. An arrowhead, spearhead, or dart point whose age and material cultural affiliation can be determined by comparison with others from previously excavated cultural resource sites.

DIKE. A thin, sheet-like intrusion of igneous rock cutting across the bedding or foliation of the country rock.

DIORITE. A rock containing feldspar and smaller amounts of dark-colored minerals. Also known as black granite.

DIP. The angle between the bedding plane or fault plane and the horizontal plane.

ECOSYSTEM. A functional system that includes the organisms of a natural community together with their environment.

EMPLACED VEIN. A thin, sheet-like rock mass intruded into another rock type.

FELSIC. Containing abundant light colored minerals such as quartz, certain feldspars, and micas.

FORM. The mass or shape of an object, which appears unified, often defined by edge, outline, and surrounding space.

FORMATION TREATMENT. The process of treating a formation suspected of being capable of oil and/or gas production to increase such production to economic levels. Such processes include hydraulic fracturing and acidizing.

GEOPRESSURED. An aquifer or reservoir in which the pressure in the available pore space exceeds the normal pressure expected at that depth.

GNEISSIC. Referring to gneiss, a foliated metamorphic rock corresponding in composition to granite.

HIGHWALL. A face or bank on the uphill side of an oil or gas drilling location.

HYDROTHERMAL. Pertaining to the action of hot aqueous fluids or solutions on rocks or mineral deposits.

HYDRAULIC FRACTURING. The process of forcing fluid into a formation through a drill hole under high pressure and inducing fractures and fissures to stimulate production.

LINE. The path that the eye follows when perceiving abrupt differences in form, color, or texture. In the landscape, ridges, skylines, structures, changes in vegetation, or individual trees and branches may be perceived as line.

LITHIC PROCUREMENT. The process of obtaining materials for the manufacturing of stone tools.

LIVESTOCK GRAZING OPERATIONS. Those operations under permit where the primary purpose is the grazing of livestock for the production of food and fiber. Includes pack and saddle stock used in conjunction with such operations.

MAFIC. Containing abundant dark colored minerals such as amphibolis, pyroxenes, and certain feldspars.

MANMADE INTRUSION. Manmade features such as roads, fences, or mineral exploration facilities.

MESOZOIC. An era of geologic time from about 225 to 65 million years before present.

MOTOR VEHICLE. Motor vehicle means any vehicle which is self-propelled.

NONIMPAIRMENT STANDARD. Activities in wilderness study areas are considered nonimpairing if they are temporary and are capable of being reclaimed to a condition of being unnoticeable in the WSA by the time the Secretary of the Interior is scheduled to send his recommendation on that area to the President with regard to designation or nondesignation as wilderness.

OVERBURDEN. Barren rock material overlying a mineral deposit.

PALEOZOIC. An era of geologic time from about 570 to 225 million years before present.

PAY THICKNESS. The thickness of the strata from which oil and/or gas is being recovered.

PEDIMENT. A broad plain of low relief at the base of a mountain front which is at least partly covered by alluvium.

PEGMATITE. A very coarse-grained igneous rock with a composition similar to granite. It is usually found in veins or dikes.

PRECAMBRIAN ROCKS. Igneous and metamorphic rocks formed during Precambrian time, which ended approximately 570 million years before present.

PREHISTORIC. Pertaining to that period of time before written history. In North America, prehistoric usually refers to the pre-Columbian period (before 1492).

PRIMITIVE AND UNCONFINED RECREATION. Nonmotorized and nondeveloped types of outdoor recreational activities.

PYRITE. A brass-yellow, metallic mineral. The composition of which is FeS_2. Sometimes called "fools gold."

PROVINCE. An area characterized by similar geologic features.

QUATERNARY. The second period of the Cenozoic era. It began 2 to 3 million years ago and extends to the present time.

RANGELAND IMPROVEMENTS. Any structural or nonstructural improvement that directly affects or supports the use of the forage resource by domestic liveseir suitability or nonsuitability for wilderness.

RECUMBENT FOLDING. Folding to such an extent that the geologic strata involved are turned upside down.

SERPENTINE MINERAL. A group of green, greenish-yellow minerals that have a greasy or silky luster and a slightly soapy feel.

SERPENTINIZATION. As alteration of rock through infiltratiiton of hot fluids causing many mafic minerals to be converted into serpentine minerals.

SHEAR ZONE. A zone of rock that has been broken by many parallel fractures.

SILICIFIED. Enriched by silicon dioxide.

STRATIGRAPHIC TRAP. Sealing of a reservoir bed due to lithologic changes rather than changes in the geologic structure.

STRUCTURAL STRATIGRAPHIC TRAP. An oil and gas trap having both structural and stratigraphic elements.

SULFIDE MINERALS. A mineral compound with sulfur as the anion (negatively charged ion) and a metal as the cation (positively charged ion).

SYNCLINE. A downward fold of rock along a linear axis.

TEXTURE. The visual manifestation of the interplay of light and shadow created by variations in the surface of an object.

THERMAL METAMORPHISM. Metamorphism that results from temperature controlled and induced chemical reconstitution of preexisting rocks, with little influence of pressure.

THROW. The amount of vertical movement as a result of a fault.

THRUST FAULT. A fault due to horizontal compression in which the fault trace dips at an angle of 45° or less.

TUFF. Rock composed of material formed from volcanic debris ejected into the air.

ULTIMATE EXPLORATION LEVEL. The percentage of an area that is ultimately or finally explored, in this case by drill hole.

UNGULATE. A hoofed animal, generally a herbivore.

UPPER CRETACEOUS. The Cretaceous is the last period of the Mesozoic era. Occurred from 135 to 65 million years before present. The adjective upper denotes the last or most recent portion of the period.

VEGETATIVE MOSIAC. A vegetative pattern made by the assembly and arrangement of many species.

ZEOLITE. A large group of hydro-aluminosilicate minerals formed, especially in beds of tuff and sometimes valuable for chemical properties allowing them to be used in ion exchange and adsorption.

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BLM-WY-ES-83-011-4332